

Minnesota

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Original Contributions

Treatment of Superficial Mycoses

HAROLD G. RAVITS, M.D.
Saint Paul, Minnesota

SUPERFICIAL fungous infections of the skin are caused by certain fungi called "dermatophytes" which usually confine their activities to the dead outer layer of the skin, the stratum corneum, as well as the hair and nails. These infections are called tinea, dermatophytoses or, commonly, ringworm.

Treatment must depend on the location of the eruption, the causative organism, state of acuity and inflammation, extent of secondary infection with bacteria, and underlying systemic disease, if present. Although the same organism may be responsible for all the infection, the treatment in different body locations will vary. Thus therapy will be discussed under the headings of specific body sites.

The dermatophytes belong to three different genera, namely, *Trichophyton*, *Microsporum* and *Epidermophyton*. These organisms have a worldwide distribution. Human infections are usually contracted either from infected animals or from other human beings. These diseases are not highly contagious, and mere exposure to large amounts of the fungous elements does not establish an infection in the majority of persons unless special predisposing circumstances are present and a peculiar susceptibility exists.

One important principle which is useful in relation to treatment and prognosis is the tendency of more inflammatory ringworm lesions to undergo spontaneous cure. In such instances of inflammatory ringworm, the clinical rule is that the lesions should be treated conservatively and the use of antifungal agents may then be unnecessary.

Tinea capitis, or ringworm of the scalp, can be either an acute inflammatory or chronic low-

grade infection. Cultural identification of the causative organism is necessary to carry out proper therapy. Tinea capitis caused by *Microsporum audouini* and transmitted from one human being to another is notoriously resistant to therapy; oftentimes x-ray epilation must be used to cure the infection. In contrast, *Microsporum canis* infections, contracted from animals, will usually respond to topical medications, and x-ray epilation is not necessary. Clipping all the hair from the entire scalp is necessary to facilitate application of medications, and daily shampooing is also done. The wearing of a stockinette or other type of closely fitted cap is recommended so as to prevent scattering of infected hair fragments.

In the resistant human non-inflammatory *Microsporum audouini* infection, antifungal agents such as the fatty acid ointments (Desenex, Sopronol, Salundek, Timofax, Naprylate, Decaprylate) are applied daily to the scalp. Also used are ointments such as Asterol, Salinidol, 5 per cent ammoniated mercury ointment, 5 per cent sulfur ointment with 3 per cent salicylic acid, or a modified Whitfield's ointment. If visible inflammation intervenes, this is almost a certain picture of spontaneous involution, and treatment is carried to a successful conclusion. Manual epilation of the infected hairs is carried out weekly under Wood's light, which shows up the infected hairs with a brilliant green fluorescence. In many instances, the infections will show no change for three to four months. The patients but more likely the parents become restless, and then a decision to carry out x-ray epilation becomes necessary. It has long been evident that no medication yet devised can penetrate as deeply into the hair follicles as do the infecting fungi; hence, no one of the above-mentioned medications can be said to be reliably effective, and there is little indication that any one of them is superior. Since the fungus seems to develop a resistance to

From the Department of Dermatology, Ancker Hospital (Dr. Harold G. Ravits, Director) and Division of Dermatology, University of Minnesota (Dr. Francis W. Lynch, Director).

Presented in the Symposium on Dermatology, Minnesota State Medical Association, Minneapolis, Minnesota, May 22, 1958.

any particular medication after a time, it is advisable to change the prescription every four to six weeks. If x-ray epilation is to be given, it must be done by one who is qualified, either a dermatologist or a radiologist, because of the dangers involved. X-ray epilation is curative in almost 100 per cent of cases of *Tinea capitis*. Some resistant rare types of *Trichophyton* infections are treated by x-ray epilation.

Microsporum canis infections are usually contracted from domestic animals and offer a better prognosis because the course of the disease is shorter and there is a greater likelihood of an inflammatory response. Treatment is essentially the same as for *Microsporum audouinii* infections except that x-ray epilation will rarely be indicated and then only in patients whose infection persists longer than six months. If inflammation is pronounced, boggy purulent tumefactions are produced, frequently associated with systemic toxicity. These lesions are known as kerions. They are treated with mild wet dressings such as Burow's solution or Alibour's (also known as Darier's) copper and zinc sulfate solutions. Strong antifungal agents are not used in this stage. The infected hairs are usually shed from the follicles by the effects of the inflammation and a spontaneous cure usually results.

Tinea barbae, or ringworm of the beard, is much less common than usually believed; most beard infections are usually bacterial. Confirmation is made by cultural studies. The typical mycotic inflammatory lesions of the beard are generally kerions and the treatment is essentially the same as in kerion of the scalp. Healing often occurs spontaneously in one to two months, sometimes with atrophy and hair loss. Frequently, it will be necessary to combat secondary bacterial infection before beginning specific antifungal treatment. The sycosiform type resemble a chronic bacterial folliculitis. Here cure is accomplished by the application of antifungal agents and manual epilation of infected hairs.

Tinea corporis, or ringworm of the glabrous skin, usually responds to treatment within two to four weeks. There are many different forms that simulate other types of skin disease and hence cultural identification of the organism is important. If inflammation is severe, wet dressings are indicated; if secondary bacterial infection is present, it must be treated with topical

antibiotics. In less inflammatory stages, antifungal agents such as the fatty acids, sulfur salicylic acid-tar ointments may be used as well as 1 per cent tincture of iodine or Castellani's paint.

Tinea cruris, or ringworm of the groins or body folds, is a very common type of fungal infection, especially in male patients. Other intertriginous infections (bacterial), psoriasis, and seborrheic dermatitis must be ruled out. Strong antifungal ointments must be avoided in these areas, as well as greasy preparations, as they are not well tolerated. Ointments with a vanishing cream base are to be preferred, as well as lotions, dyes, powders and wet compresses. A mild salicylic acid (2 per cent) sulfur (3 per cent) cream is helpful, as well as fatty acid preparations in lotion or powder forms. Vioform lotion and hydrocortisone lotions may be very helpful. Aeration is important, and loose garments should be worn to avoid irritation from friction. Secondary bacterial infection, if present, should be dealt with promptly.

Tinea pedis, or ringworm of the feet, is the most common type of fungous infection. The majority of shoe-wearing adult men acquire fungal infections of the feet. It is quite rare in children. Intertriginous ringworm of the feet consists of maceration, sogginess, scaling and fissuring in the interdigital spaces. The most effective methods of treatment of this type are simple. Rest and dryness are important. Antifungal dusting powders are used and ventilated leather soled shoes should be worn, as well as clean, dry absorbent socks. The removal of debris and macerated skin should be accomplished. Foot soaks of 1:8000 dilution of potassium permanganate solution twenty minutes twice daily are of value in acute flares. Antifungal fatty acid preparations are most useful because they rarely cause irritation. Castellani's paint is also of value.

Acute vesiculobullous fungous infections of the feet are treated the same as acute dermatitis of any cause. Wet compresses are used such as Burow's solution 1:20 dilution, Alibour's solution diluted 1:32, potassium permanganate solution 1:8000 dilution, etc. If bacterial infection is superimposed antibiotic therapy is indicated. After the acute inflammation has subsided, antifungal ointments may be used such as Asterol, Vioform, Sterosan, Enzactin, and the fatty acid ointments such as Desenex, Timofax, Sopronol

TREATMENT OF SUPERFICIAL MYCOSES—RAVITS

and Naprylate. Many of the preceding medications are also available in powder and lotion forms.

A less common dry hyperkeratotic form of tinea may affect the feet and hands. This form is usually caused by *Trichophyton rubrum* and is notoriously resistant to treatment. Besides the above-mentioned antifungal ointments, strong salicylic acid ointments (6 to 10 per cent) are used (variations of Whitfield's ointment).

Allergic reactions to fungal infections occur most frequently on the hands. These lesions are called "ids." Usually, treatment of the infection of the feet will result in involution of the hand lesions, but this is not always true. These lesions may require therapy as used in non-specific dermatoses.

Tinea unguium, onychomycosis or ringworm of the nails, is a highly unsatisfactory condition to treat. Debridement of diseased nails must be carried out by careful filing or by use of a motor-driven dental burr or abrasive wheel. If one or two nails are involved, which is rare, surgical avulsion is sometimes advocated. Solutions of fungicides are usually used because of greater penetrability. Asterol in tincture and ointment is helpful. X-ray radiation has been used with questionable results. Long and continuous treatment is essential, and many patients must be con-

tent with improvement in varying degrees, oftentimes dependent on the efforts exerted by the patient.

Cutaneous candidiasis, or moniliasis, which affects mucous membranes, periungual tissues, nail and intertriginous areas is fairly common and probably of increasing incidence. In therapeutic management of moniliasis, correction of underlying predisposing factors, such as malnutrition, excessive exposure to moisture, diabetes, obesity, should be corrected. For treatment of local lesions, aqueous gentian violet 0.5 to 1 per cent is a long-standing favorite. For monilial vaginitis, it is available in a gel form (Gentia-Jel). Fatty acid preparations previously mentioned are effective in treatment of moniliasis. A relatively new antibiotic, nystatin (Mycostatin), is a potent antimonilial agent. It is available in powder form, vaginal tablets, oral tablets, ointment, and as a suspension.

In summary, it is apparent that there are many different types of antifungal agents and many different clinical types of superficial mycoses, even if caused by the same type of organism. General principles of dermatological therapy must be applied judiciously in regard to acuity, inflammation, secondary infection and specific locations of the various types of eruptions.

STUDENTS RECEIVE HEART ASSOCIATION FELLOWSHIP

Eight Rochester students, one from Spring Valley, one from Chatfield and one from St. Charles are among twelve young Minnesota people who are working at the Mayo Clinic this summer as recipients of a summer fellowship conferred by the Minnesota Heart Association. The twelve students, whose interests are primarily in science as a career, began their work at the Mayo Clinic at differing times, each for a period of two months. One group started to work in June; another on July 1.

Working in the cardiovascular laboratory of Dr. Earl H. Wood, professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota, are Nancy Schmidt and Henry Thomas, Rochester. Both have attended the Rochester High School.

Sandra Siegel, Sharon Cadman, Don Helmholz and John Howell, all of Rochester, are working in the Section of Biophysics and Biophysical Research under the direction of Dr. Edward J. Baldes, professor of biophysics in the Mayo Foundation, Graduate School, University of Minnesota. Miss Siegel and Miss Cadman have attended the Rochester High School; Helmholz has attended Harvard University and Howell has studied at the California Institute of Technology.

William Hurtle, of Rochester, who has attended the Rochester High School, is working in the electromyography laboratory of Dr. Edward H. Lambert, associate professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota.

Marcia Ruth Nelson, of Rochester, who will be a sophomore in the Rochester Junior College in the fall,

began work on June 2 in the laboratory of Dr. Warren F. McGuckin, instructor in physiological chemistry in the Mayo Foundation, Graduate School, University of Minnesota.

Roberta Jeffries, of Chatfield, a freshman in the Rochester Junior College, is working in the electroencephalography laboratory of Dr. Reginald G. Bickford, professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota.

David Krugel, of Spring Valley, a student in Luther College, Decorah, Iowa, is working in the Section of Biochemistry under the direction of Dr. Harold L. Mason, professor of physiological chemistry in the Mayo Foundation, Graduate School, University of Minnesota.

Edward Nelson, of St. Charles, a graduate of Gustavus Adolphus College and holder of the degree of master of science from the Colorado State College of Education, is working in gastroenterologic physiology in the laboratory of Dr. Charles F. Code, head of the Section of Physiology and professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota.

Charles Miller, of Minneapolis, is working in the laboratory of Dr. Wood.

Two other students, Joseph Emond, Jr., of Farmington, a premedical student in the University of Minnesota; and Elaine Handelman, of Minneapolis, are working at the University of Minnesota on summer scholarships awarded by the Minnesota Heart Association.

Acne Vulgaris and its Management

FREDERIC T. BECKER, M.D.
Duluth, Minnesota

SINCE the comprehensive reviews on "Acne Vulgaris and Its Management" by Sulzberger¹ and others—first in 1933 and again in 1949—sufficient changes have occurred to make a further analysis desirable.

A better understanding of the sebaceous gland's physiology and pathology² has been achieved. These glands are most numerous on forehead, sides of cheeks, center of chest and back, which are the more prevalent sites of acne. There is a marked increase in sebaceous gland activity with the onset of puberty, reaching a stationary level at the age of twenty to twenty-five years and decreasing thereafter. The advent of steroid therapy has again reaffirmed the effect of androgens on stimulation of the sebaceous glands in susceptible individuals. Studies³ on the androgen excretion of individuals with and without acne reveal no apparent variation, so the sebaceous gland is apparently more reactive to this hormone in the acne-prone individual. This hormone is derived from testicular tissue in the male and the corpus luteum of the female. Other factors which stimulate sebaceous gland hyperactivity are diets rich in lipids or carbohydrates and increased perspiration, especially associated with high humidity.

Pathologically,⁴ the acne lesion represents a foreign body reaction about the keratinized plug (comedone) resulting in hyperplastic enlargement and folliculitis. Secondary bacterial infection may occur resulting in abscess formation. The organisms cultured from these abscesses are mostly saprophytic micrococci, variety albus or aureus.

Therapy

From this brief review of the fundamental, pathologic, and physiologic alterations which occur in the acne lesion, one can more readily rationalize a therapeutic regime.

From the Department of Dermatology, The Duluth Clinic, Duluth, Minnesota.

Presented in the Symposium on Dermatology, Minnesota State Medical Association, Minneapolis, Minnesota, May 22, 1958.

The diet should eliminate excess fats, chocolate, nut products, and fat-fried foods along with an abundance of carbohydrates. The halogens, especially iodine and bromide, have long been known to be irritants to the skin's oil glands and should be eliminated. A frequent source of excess iodine is the over-the-counter super vitamin preparations.

Local treatment should be directed to removal of the excess sebaceous material, the reduction of the local bacteria, and the removal of excessive keratinization about the gland orifices. This process can be aided by the proper use of soaps. Those agents containing detergents, which aid in the removal of fat, with the addition of hexachlorophene to reduce infection, and sulphur to produce exfoliation are preferred. We frequently prescribe 5 per cent colloidal sulphur added to phisoex soap or a preparation known as Fostex soaps. Astringent or cleansing solutions are basically 1-2 per cent salicylic or resorcin compounds incorporated in alcoholic vehicles to which 10-20 per cent acetone may be added for additional ease in fat removal.

Local remedies should have effects similar to those of soaps except that for daytime use they should be cosmetically acceptable. The appended formulary may be helpful in choosing the proper medication. For comedone acne, pastes are more beneficial. The strengths of the sulphur and keratolytic agent (resorcinol or salicylic acid) depend on the skin of the individual. Blondes and red heads require lower concentrations than do brunettes. Those with excessively oily skins and pyogenic lesions are better treated with lotions. Preparations in weaker strengths may be applied during the day if mixed with Neutracolor to blend with their skin. Pigments aid in masking the disfigurement and improve the psychological outlook of the patient. The addition of 5 per cent sulfacetamide has proved useful in controlling superficial pustular lesions, and during the past three years we have only seen one allergic reaction to it.

Antibiotics.—There is little doubt that the proper utilization of the wide-spectrum antibiotics⁵ has been a welcome addition to our therapy. Cultures have, in most instances, revealed a saprophytic

age and duration of treatment are still debatable. At present, I am using the buffered tetracyclines (or those to which glucosamine is added) in doses of 250 mg. every eight hours for five days, then



Fig. 1. (above) (a) Preoperative photograph showing bridge and pitted scars and residual active cysts. (b) One year after two dermabrasions.

Fig. 2. (below) (a) Preoperative photograph of forty-year-old woman with pitted and linear scars. (b) Six months after one skin planing shows benefit of pitted and linear scars.

micrococcus pyogenes insensitive to penicillin, but at present most responsive to the tetracyclines. The mode of action⁶ is still not clear; besides a local reduction in the pustules, there is a marked diminution in the staphylococci found in the nasal flora of most of these patients. Only a qualitative change has occurred in the intestinal bacteria in these otherwise healthy individuals. The dos-

age and duration of treatment are still debatable. Treatment is then discontinued except in the severe multiple cystic (conglobata) cases where it is continued for from four to six weeks. Occasionally, the drug has to be readministered. In those failing to show an adequate response after five days, culture and antibiotic sensitivity studies are performed. Drain-

ACNE VULGARIS AND ITS MANAGEMENT—BECKER

age of small superficial abscesses should be carried out, and, in large multilocular cysts, the material should be aspirated and suspensions of neomycin and polymixin instilled.

reserved for those cases not showing response to other previously mentioned therapeutic regimens and in which severe scarring will ensue because of the depth of the lesions.



Fig. 3 (above) (a) Preoperative photograph showing ridged, pitted and bridged scars. (b) Six months after two skin dermabrasions shows flattening of ridged scars and general smoothing of skin contour.

Fig. 4 (below) (a) Preoperative photograph showing minimal pitted scarring. (b) Photograph six months later after one procedure. Patient improved but not satisfied, stressing need of proper evaluation of patient's expectations.

Radiation Therapy.—There is little doubt that properly applied fractional dosage of roentgen therapy given over a three-month period and not exceeding 900 roentgens per field produces excellent results without sequelae. This treatment is

Hormone Therapy.—Hormonal therapy⁷ in the form of estrogen can produce improvement of acne in selected individuals. Those who are apt to be responsive are female patients with premenstrual aggravation or those who were bene-

ACNE VULGARIS AND ITS MANAGEMENT—BECKER

fit by pregnancy. I prefer the natural occurring estrogens (sodium estrone sulfate) given after ovulation and ten days before the onset of the menses. The dosage⁸ and time of therapy can be

given diethylstilbestrol, 0.25 mg. to 0.5 mg. daily, three weeks of each month.

Vitamin A.—In our experience, the utilization of water-soluble Vitamin A in the therapy of acne



Fig. 5 (above) (a) Preoperative photograph showing large pores and ice pick scars. (b) Three months after one procedure showing little improvement; this type of scarring not amenable to any operative procedures.

Fig. 6 (below) (a) Preoperative photograph showing rhinophyma and linear scars and wrinkles. (b) Two months after one procedure, note reduction of bulbous nose and improvement in scarred wrinkles.

more accurately studied by the use of vaginal smears for cornified epithelium. Men (over 17 years of age) with severe nodular cystic acne who have been unresponsive to all other therapy are

has very limited usage. I employed this medication in over 300 cases and found it only useful in comedone acne especially those who showed other signs of avitaminosis A. These are individ-

ACNE VULGARIS AND ITS MANAGEMENT—BECKER

FORMULARY

Soaps

- Basis 10% Sulphur Soap. Duke Laboratories.
- Postex bar and liquid soap. Westwood Chemical Company
(a combination of hexachlorophene, sulphur and salicylic acid)
- Vel bar soap. A good soap for mild non-infected oily skin.
- 3 to 5% Colloidal sulphur in Phisohex soap.
- Lava soap. For abrasion effect in comedone acne.

Acne Preparations

Lotions—

- Monoacetate of Resorcinol or Salicylic Acid.....2-4%
- Precipitated Sulphur.....6-10%
- Neutractor.....0.5-1% for coloring
- Leiner's Zinc Lotion q.s.....120.0
- 5% Sulfacetamide to be added for superficial infections.
- Compound Sulphur and Resorcin lotion.
(Resulin — lotion tinted — blonde or brunette)
Almay
- Sulforcin lotion or cream, untinted.
- Liquimat, a tinted lotion with sulphur.
Texas Pharmacal Co., San Antonio, Texas.
- Polythionate lotion. Upsher-Smith, Minneapolis, Minnesota.
- Lotio Alba. N.F.

Pastes—

- Acne Dome cream and compact. Dome Chemical Company.
- Acnomel. Smith, Kline & French, Philadelphia, Pa.
- Sulforcin base— $\frac{1}{2}$ and full strength, with and without resorcinol.
- Three shades—light, medium, and dark. Texas Pharmacal Co.
- Salicylic Acid or Resorcinol.....0.35
- Precipitated Sulphur.....0.65
- Petrolatum.....10.0
- Zinc Paste q.s.....30.0
- Neutractor to tint as desired.....0.5 to 1%
- Precipitated Sulphur.....3.0
- Kaolin.....3.0
- Unguentum Zinc Oxide.....30.0
- Salicylic Acid or Resorcinol may be added for keratolytic effect:
- Intraderm Sulphur. Wallace Laboratories—(Strong Liquid Sulphur Solution)
- Pronac powder makes Vleminckx's solution. Can be made fresh as needed for use.

Astringent or Cleaning Solutions

- Salicylic Acid or Monoacetate of Resorcinol.....1-3%
- Glycerine.....5%
- Acetone.....10-20%
- Spirits Odorat or Bay Rum for perfume q.s.
- Alcohol 70%.....q.s.
- Sebanil. Texas Pharmacal Company.

uals with generally dry peripheral skin associated with keratosis pilaris on the extensor surfaces of the extremities. The dosage should be 100,000 units a day in a divided dose and must be given over three months in order to be effective.

Emotional Factors

One must not neglect the effect of emotional upsets on the acne eruption which is usually manifested by minimal lesions in which mutilation results from picking and squeezing. Treatment of the acne alone in such individuals is a neglect of the underlying problem which must be solved to bring about satisfactory improvement. Nervous tension produces excessive stimulation of the pilosebaceous glands and frequently may cause exacerbations.

Treatment of Acne Scars

In spite of all newer modalities of therapy, one is still confronted with a scarred face which provokes a great deal of psychic trauma. Through the years, various methods of improving scars have been tried. Kromayer⁹ in 1905 utilized abrasive stones powered by dental motors. This was a vast improvement over earlier hand abrasives with pumice and other materials. For a period, freezing with a carbon dioxide slush was popular. During World War II, Iverson¹⁰ and later McEvitt¹¹ popularized the use of coarse sandpaper. This procedure required either a local or general anesthesia.

Kurtin¹² in 1952 instituted another method employing an ethyl chloride spray with a blower to freeze and anesthetize the skin. He also developed stainless steel brushes, driven by a high speed (15,000 rpm) cable motor, to perform the abrading. Since that time, various modifications of this procedure have evolved, namely by Eller,¹³ who recommended the use of a belt-driven machine rather than a cable, because he believed there was less vibration at high speeds. He also preferred serrated steel wheels, diamond fraises, and heatless stones rather than steel brushes. In 1954, Wilson, Luikart, and Ayres¹⁴ introduced dichlorotetrafluoroethane as the anesthetic and refrigerant. Its greatest advantage lies in not requiring the air blower for evaporation to produce freezing, and it is less toxic on inhalation than ethyl chloride.

In my experience, cosmetic defects amenable to dermabrasion therapy are: pitted and bridge scars, recalcitrant active acne, rhinophyma, and linear scars.

In the selection of patients, the most important prerequisite is adequately functioning pilosebaceous glands; therefore, this procedure should not be used in severe radiation-damaged skin. It is also important that the patient desires therapy

and that the scarring is sufficient to warrant treatment. One must beware of the narcissistic individual with minimal scarring. This procedure does not benefit enlarged skin pores or so-called ice pick scars.

The technique of the operative procedures, though not difficult, is tedious. Those interested in performing this therapy should read *Wire Brush Surgery* by J. W. Burks, Jr.¹⁵

Complications in my experience of treating over 200 patients have been negligible. Mild superficial infections, especially about the nasolabial folds, have occurred infrequently and have required only local applications of antibiotic ointments. About 60 to 80 per cent improvement is usually obtained with the first planing and to a lesser degree with each subsequent treatment. I usually wait from six to twelve months between each procedure. Erythema of the planed area usually lasts from six to twelve weeks and may be masked by face powder. Pigmentation of the borders sometimes occurs around the planed areas, especially after actinic exposures. The development of milia (white heads) is the most frequently observed reaction, and they all eventually disappear.

Postoperative dressings and care vary a great deal except in one essential; that is the need of early exposure to air. We apply sterile vaseline gauze pressure dressing for twelve hours, and then it is removed and the crusts allowed to dry. After five days, the patient sponges the area with sterile water and soap twice a day. Nearly all crusts are removed by the end of five to seven days. We have found antibiotics unnecessary either for local or systemic medication.

At present, I believe this method to be the best since it requires no general anesthesia, it can be

done in the office, the loss of the patient's time is minimal (five to seven working days), the areas to be treated can be selected, the freezing of the skin allows a bloodless field of operation, and the complications of foreign body granulomas do not occur.

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ACCIDENTAL DEATH STATISTICS

Accidents, which have claimed an average of 93,000 lives annually over the past ten years, are responsible for 6 per cent of all deaths in the United States. Among persons one to thirty-six years of age, they are a leading cause of death.

Accidents play an important role in the mortality of

the aged, a fact that may be overlooked because of the high incidence of chronic diseases in that group.

Among persons past age sixty-four, accidents cause between 25,000 and 26,000 deaths annually. Aging persons account for one out of every four accidental deaths.—*Patterns of Disease*.

Dermatitis of the Hands

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ECZEMA is a term which is difficult to define. Its meaning depends largely on the particular concept of the individual physician. It is a common, superficial, inflammatory dermatosis which does not belong to any other recognized dermatologic category and which, in its evolution, is characterized by the formation of vesicles. Eczema is generally recognized on a morphologic rather than an etiologic basis. Just as Hebra (cited by Sulzberger and Wolf¹) stated: "Eczema is that which looks like eczema." The acute phase is characterized by vesiculation, weeping, exudation, erythema and edema. During the subacute stage, macroscopic vesiculation and weeping may or may not be present and there is less erythema and edema. Later in the course of the disorder there is no vesiculation nor weeping and little or no erythema and edema. During this phase there may be scaliness and lichenification. In this paper no distinction will be made between the terms eczema and dermatitis.

Dermatitis of the hands is an extremely common disorder and, according to Lane and his colleagues,² constitutes about 9 per cent of the daily medical effort of a practicing dermatologist. Many of the patients are housewives whose hands come in contact with a wide variety of cutaneous irritants. Excellent discussions of the subject have been published by Jordon and his colleagues³ and Sutton and Ayres.⁴

Mechanisms of Dermatitis of the Hands

Eczematous eruptions of the hands are provoked by many mechanisms among which are physical agents; contact with primary irritants and sensitizers; infection with viruses, bacteria and fungi; tension and fatigue; heredity and combinations of these mechanisms.

Physical Agents.—Trauma, friction, excoriation, heat, cold, moisture and maceration, and radiation

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(actinic, roentgen or radium) may produce dermatitis of the hands. The effect of these agents includes lacerations, bruises, crushing injuries, chapping, burns, frost bites, sunburn and radiodermatitis. A prerequisite for the successful management is the elimination of continued action of the irritants and protection by means of bland, soothing applications which allow the skin to heal as best it can. In some cases of radiodermatitis, plastic surgery is necessary.

Primary Irritants and Sensitizers.—The substances in this group which can produce a contact dermatitis of the hands are too numerous to list. They include most occupational and industrial excitants; substances encountered in hobbies, games, professions; soaps, cleansers, plants, gloves, rings, bracelets, topical medications applied to self or others; in fact all objects which may be touched, handled, held or worn. The irritant and drying effects of soaps and detergents, especially during the winter months, may initiate an eczematous eruption of the hands especially in housewives. Common household irritants such as bleaches, waxes, polishes, hand lotions and creams may add to the irritation. Secondary infection may occur.

Parasitic Infections.—External parasitic infections include impetigo, infectious eczematous dermatitis and dermatomycosis due to specific fungi. There are many other infections such as warts, carbuncle, diphtheria of the skin, anthrax, tuberculosis and syphilis which will not be considered in this presentation.

In spite of the frequency with which the diagnosis of primary fungous infection of the hands is made, it is relatively rare. The diagnosis should be accepted only after the organism has been demonstrated by direct potassium hydroxide mounts examined microscopically or by cultures on Sabouraud's medium.

The role of internal focal parasitic infections in the production of eczematous eruptions on the hands is debatable. Undoubtedly, significant foci may exist in distant sites from cutaneous diseases

DERMATITIS OF THE HANDS—LAYMON

such as teeth, gums, tonsils, sinuses, prostate, cervix, bladder and the gastrointestinal tract. The pustular bacterid as emphasized by Andrews⁵ presents discrete lakes of pus about the fingers and on the palms and soles. The pustule, undergoing involution, dries to a thin scale and discrete brownish macule, but other secondary changes are infrequently seen. Andrews regarded the affection as dependent upon focal infection. Unfortunately in my experience I have been unable to find foci of infection in most of the cases and in those where such foci were found, removal did not influence the course of the disorder.

Tension and Fatigue. — So-called exudative neurodermatitis (nummular eczema) is generally regarded as a distinct type of chronic dermatitis of the hands. It attacks the dorsal surfaces and other parts of the extremities in the form of oval patches, 1 to 5 cm. in diameter, consisting of groups of vesicles or vesico-papules. The lesions are quite sharply demarcated, worse in winter and aggravated by friction and alkali. In most cases the dermatosis is recalcitrant to treatment. Many measures have been used including roentgenotherapy, sulfonamides, antibiotics, and removal of foci of infection.

Lichen chronicus simplex (circumscribed neurodermatitis) of the palms and soles has been discussed by various observers. Many of the cases resemble keratoderma climactericum but do not occur exclusively in women. The patients are adults and the majority of them are beyond middle age. The lesions consist of sharply circumscribed, hyperkeratotic, nonvesicular plaques. They are intensely itchy and frequently become fissured. Symmetry is the rule and the lesions are usually located on the mid-palmar regions although occasionally on the fingers.

Atopic dermatitis, a disorder of unknown cause, is usually flexural but may affect the hands predominately. It is a dry disease unless it is secondarily infected and usually occurs on the dorsal surfaces of the hands and fingers, tends to become worse during the winter months and is resistant to treatment. Heredity, tension and fatigue play a poorly understood role.

Management of Dermatitis of the Hands

The treatment of dermatitis of the hands requires both internal and external measures. Although internal medications have assumed in-

creased importance during the past few years, topical therapy is still important. A common error in dermatologic therapeutics is the application of remedies which are too strong or entirely unsuitable for the case in question. In general, the more acute the disorder the milder the local treatment should be.

Moist applications are more effective when they are not hampered by the presence of scales and crusts, hence proper cleansing of the skin is important. Cleansing can be accomplished in acute and subacute dermatoses, when vesiculation and oozing are present, by means of the application of moist compresses. In some subacute dermatoses cleansing may be accomplished by the use of mineral or olive oil or a cleansing cream. In subacute or chronic dermatitis, scales, crusts or medications may be removed with benzine or carbon tetrachloride. There are numerous proprietary soapless detergents which are useful occasionally: sulfonated oils, Acidolate, Phisoderm, Allercrème Detergent Oil, Lowila Cake, Dermolate, et cetera.

In acute eczematous dermatoses of the hands moist compresses maintain drainage and prevent rapid changes in temperature of the skin. Wet dressings are soothing, antipruritic and mildly antiseptic. They should be thick and placed snugly about the affected parts, kept constantly wet and changed frequently (every two hours if possible). They should not be covered with impervious materials such as oiled silk. The Derm-Pak therapeutic glove* has been a great boon in the management of dermatitis of the hands. The glove offers a convenient and timesaving method for applying absorbent moist compresses in the treatment of "housewife's," occupational and other types of eczema of the hands. The glove is made of twelve-ply quilted and washed hospital gauze. The Derm-Pak glove is ventilated to prevent maceration and may be washed and re-used. It is available in two sizes, small and medium, and either glove fits the right or left hand. In the hospital, the glove expedites nursing care and permits patients to read and feed themselves. In the home the glove enables patients to carry on simple household duties without interrupting the treatment.

The medications used most commonly for moist compresses are Burow's solution (aluminum sub-

*Manufactured and distributed by the Derm-Pak Corporation, 292 East Fifth Street, Saint Paul, Minnesota.

acetate) and Darier's solution (copper and zinc sulfate). The former is usually diluted 1:20, and the latter 1:30 with distilled water. Occasionally other solutions are used such as potassium permanganate (1:5000) and silver nitrate ($\frac{1}{8}$ to $\frac{1}{4}$ per cent).

In subacute dermatitis of the hands, shake lotions are helpful. They are liquid preparations usually having water and/or alcohol as a base and containing ingredients in solution or suspension or both. As the liquids evaporate, the powders and other ingredients remain, thus cooling the inflamed skin. Lotions are useful in extensive dermatoses which are relatively nonexudative. They may be sponged on or spread on with a soft brush. Various medications such as antipruritics, keratolytics and antiseptics can be added to lotions alone or in combination as required. The most commonly used shake lotions are: zinc lotion (Leiner's lotion), calamine lotion, Schamberg's lotion and dry paint.

Pastes, which are also helpful in subacute dermatoses, are semisolid preparations consisting of mixtures of greases and finely dispersed powders (talc, zinc oxide, etc.) in varying proportions. Pastes aid in absorbing secretions and are more permeable than ointments. They are less macerating, occlusive, and heating. The most commonly used one is zinc paste (Lassar's) which contains zinc oxide 25 per cent, talc or starch 25 per cent in a greasy base.

Ointments (salves) constitute one of the oldest and most commonly used forms of dermatologic therapy. They consist of medications in greasy bases such as animal fats (lanolin, lard, cocoa butter), mineral fats (petrolatum) and preparations such as Absorbent Base (Upsher Smith), Aquaphor (Duke Laboratories) or Hydrosorb (Abbott Laboratories). Ointments are usually contraindicated in moist, oozing eruptions, since they interfere with drainage.

It is not within the scope of this paper to discuss all of the various medications which are used alone or in combination with the aforementioned vehicles. These include antipruritics (menthol, camphor and phenol), keratoplastics (salicylic acid and resorcin in weak concentration), keratolytics (the same drugs in stronger concentration) and many antieczematous agents. In the past few years hydrocortisone has proved to be valuable either alone or in combination with other agents such as Ichthyol, Nafatlan, various types of tar, Vio-

form and Sterosan. Eczematous eruptions of the hands which are secondarily infected are benefited by the application of hydrocortisone in combination with one or more of the antibiotics such as bacitracin, neomycin and polymyxin.

The proper, cautious use of superficial roentgenotherapy is helpful in eczematous eruptions of the hands. Such treatment requires special dermatologic training and experience. Ultraviolet radiation may be of occasional value.

Comment and Summary

Dermatitis of the hands is usually complex etiologically and is seldom due entirely to one mechanism. In most instances the irritants which produce eczema are external and only relatively few cases are due to blood-borne noxae. Undoubtedly there is a predisposition to the eczematous form of response in certain individuals and on certain parts of the skin. In some cases of dermatitis of the hands the substances which produce dermatitis of the hands are numerous and varied, although in most there seems to be a selectivity in sensitizations to various substances. When physical agents play an important role, areas of the skin which are in juxtaposition, are predisposed such as the groins, eyelids and post-auricular regions. Trauma, friction, maceration, and other factors produce dermatitis more easily in these locations. In eczema of the hands the interdigital areas are more susceptible, as exemplified by the frequent occurrence of dermatitis beneath rings due to sensitization to metal or irritation from soap and detergent films beneath the rings.

In the management of eczematous eruptions of the hands certainty of diagnosis, whenever possible, is important for proper therapy. The choice of medications is determined largely by the morphologic characteristics of the eruption. It is better to use a few remedies and know them well than to use many and not be thoroughly acquainted with them. Any chosen medication may do harm. If it does, stop it at once. As Stokes (cited by Wise and Sulzberger⁶) so aptly put it: "An expert can, by a skillful (and to the uninitiated, quite incomprehensible) juggling of lotions and salves, produce effects that an amateur cannot imitate."

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(Continued on Page 543)

Use of Sedatives and Tranquilizers in Dermatology

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FOR many years sedatives and, in recent years, the so-called tranquilizers have held a prominent though not always distinguished place in all branches of medical practice. That they are useful, desirable, and efficient is admitted readily, but it is likewise true that all too often they are administered indiscriminately, lavishly, and inexpertly.

My role in this symposium is to evaluate in so far as possible their proper use in the field of dermatology and, equally important, to relate their untoward effects. These drugs do not cure—they impart to the afflicted patient sleep, relief of tension and apprehension, acceptance of unwanted situations, and promote more calm relaxed attitudes toward the problem. Incidentally, the physician's burden of care and consultation is also eased because of the patient's more docile and tractable reaction. It should be pointed out that there is no great distinction between sedatives and ataractics (the latter term is preferable to tranquilizers). Sedation connotes the production of sleep or drowsiness and ataraxy the assuaging of tension.

These preparations should never supplant a physician's interest in his patient nor be a substitute for time when the physician should explain to his patient the problems involved and the influence of "mind over matter." These drugs must be considered as agents of relief and as potentiating the effects of other remedies rather than a cure.

Many dermatologic conditions are psychogenically induced or exaggerated. For patients afflicted with such disorders, these drugs are indicated and are of definite value. Examples of such dermatoses are anogenital pruritus, atopic dermatitis, dysidrosis, urticaria in some patients, neurodermatitis, nummular eczema, prurigo, and even occasionally,

rosacea and psoriasis. In this listing it is seen that most of these conditions are accompanied by pruritus of varying degrees, and yet sedatives and ataractics are not primarily antipruritic in action. It must be admitted, however, that there is no truly good antipruritic and at least with this group of medicaments awareness and appreciation of itching are lessened. Consequently, the use of mild sedation and ataraxy has two possible beneficial components: (1) relief of the tension that precipitates the dermatosis, and (2) lessened awareness of pruritus with resultant increased comfort.

Each of us has his favorite sedative, analgesic and ataractic which he uses when and where he thinks indicated. My choices may not agree with yours and vice versa. This is as it should be provided that each of us understands the indications, limitations, contraindications and possible untoward reactions of the drug being administered. Yet some generalizations are possible and should be made.

Narcotics are rarely, if ever, indicated in dermatologic practice. This is not only for the reason that they produce addiction. They also may evoke severe pruritus.

Barbiturates of various types and commercial origin have been used for decades as sleep-inducing agents, and for this indication they are satisfactory. On the other hand, they may enhance scratching by decreasing the cortical control necessary to inhibit the scratch reflex, and consequently, they may increase the itch-scratch cycle. Hence, I do not think barbiturates are indicated in the care of patients with pruritic dermatoses. What then is a desirable sedative for dermatologic patients? Chloral hydrate I believe is satisfactory. It sedates, is not expensive, rarely produces untoward reactions, and does not increase the itch-scratch cycle. There are newer sedatives, such as ethchlorvynol, glutethimide, ethinamate, methypylon and methylparafynol, that are not barbiturate derivatives. These may be used instead of chloral hydrate.

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SEDATIVES AND TRANQUILIZERS IN DERMATOLOGY—KIERLAND

Ataractics in common use today are of three basic chemical types, namely, alkaloids of Rauwolfia, meprobamate, and phenothiazine derivatives. Without going into the advantages and dis-

the degree that the dosage and frequency of administration of analgesics may be decreased materially. In this connection, ataractics have proved beneficial in the management of patients with the

TABLE I. THE COMMON UNTOWARD REACTIONS OF SEDATIVES AND ATARACTICS

| | Cutaneous | Systemic |
|---------------------------|---|--------------------------------------|
| Barbiturates | Scarlatiniform and morbilliform erythemas | Paradoxic excitability |
| Chloral hydrate | Fixed drug eruption | Habit forming |
| | Erythematous bluish | Mental confusion |
| Alkaloids of Rauwolfia | Scarlatiniform erythema | |
| | Simple purpura | Depression |
| Meprobamate | Toxic erythema | |
| | Urticaria | Acute anaphylactoid reactions (rare) |
| Phenothiazine derivatives | Morbilliform erythema | Gastrointestinal upsets |
| | Erythemas | Jaundice (rare) |
| | Photosensitivity | Hematopoietic suppression (rare) |
| | Contact dermatitis | |

advantages of one over another, it can be said truthfully that when administered in low dosage (which is employed for the great majority of patients seen with dermatologic conditions) they are usually safe. It should be mentioned that the actions of alcohol and of barbiturates are potentiated in patients receiving ataractics, and for that reason they should not be given concurrently.

The use of ataractics in patients with psychogenically induced dermatoses and with pruritic dermatoses has been cited previously. There is still another category of conditions for which they are of value, namely those accompanied by pain. Here the appreciation of pain may be allayed to

lightning and spot pains and gastric crises of tabes dorsalis, with painful cutaneous ulcerations and with herpes zoster and postherpetic neuralgia.

There is no drug or medicament administered by any route that does not produce untoward reactions in occasional patients. The preparations under discussion are no exceptions, and the untoward reactions most commonly seen (though still rarely) are listed in the accompanying table. These reactions usually subside promptly when use of the offending medicament is discontinued.

This paper is so brief and covers so wide a field about which volumes have been written that it, in its entirety, may be considered a summary.

JAWBONE GRAFTS STILL STRONG AFTER FORTY YEARS

Hip and shin bone, substituted nearly forty years ago for jawbone in two World War I soldiers and a civilian tumor victim, are still functioning perfectly today. Recent x-ray examinations show complete consolidation of the bone grafts at each end with the original silver wires still in place.

These results were reported recently to the American Association of Plastic Surgeons meeting in Dallas, Texas.

In 1919, bone from a soldier's shin bone was used to repair a defect in his lower jaw. In another 1919 case, a transplant was taken from a soldier's hip bone. Today,

one of these soldiers is a leading orthodontist. The other is a successful business executive.

The third patient, a mechanical engineer, had two inches of his lower jaw replaced in 1920 by a graft from the crest of his own hip bone.

The report on these successful bone grafts was made by Dr. Robert H. Ivy, Professor Emeritus of Plastic Surgery at the University of Pennsylvania Medical School and Dr. Joseph Eby, a New York orthodontist. Dr. Ivy performed the original surgery and Dr. Eby designed the splints to hold the bone fragments in place and replace the teeth lost with artificial dentures.

The Present Status of Herpes Simplex

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Albert Lea, Minnesota

THE AGE-OLD thorn in the side of the ophthalmologist, herpes simplex, remains prominently there today. Indeed, it has become more of a problem with the passing of time. Since the war, there appears to have been an increase both in the incidence and in the severity of the disease.¹⁻³ More reports of chronicity associated with disciform keratitis and uveitis are appearing. Prior to the time of the steroids, corneal perforation and hypopyon were unheard of complications; now, several cases of each have been reported. A better understanding of herpes simplex and its associated problems, seems in order.

Clinical Aspects

Herpes simplex is one of the most common viral infections affecting man. Few individuals go through life without contracting it, yet few have serious sequelae. One sees, largely, the recurrent type of infection that occurs in an individual who previously has had a primary infection usually without symptoms. The natural history of the disease is vital to the understanding of the problem. Passive immunity from the mother exists in the newborn child up to the age of six months or so. It is rare, therefore, to have the disease prior to that time. Exposure to the virus after that time results in a primary infection which will be discussed later. Greater than 90 per cent of the primary infections are subclinical.

Following the primary infection, antibodies are built up and the virus is harbored in a latent state. It remains latent until by some stimulus it is released and a recurrent infection takes place. The stimulus necessary varies with the individual, but fever, sunlight, trauma, corneal foreign body or abrasion, menstruation and emotional stress are the ones most commonly involved. It appears that susceptible individuals have circulating antibodies and are subjected to repeated attacks, while non-susceptible individuals

have no circulating antibodies. It is of interest also that about 90 per cent of the lower class have serum antibodies while only 30 to 35 per cent of the college students have.⁴

Clinical Types

Acute primary herpes simplex.—This initial infection is seen usually in the child or the young adult, one without circulating antibodies. Its clinical features vary from a few isolated vesicles to a fulminating illness. As previously mentioned, however, most cases are asymptomatic. The face, especially around the nose and mouth, gives rise to the typical picture of a "cold sore" or "fever blister." Occasionally the lid margin, conjunctiva and the cornea are involved. If the eye itself is the site of the primary infection, the picture is one of an acute, violent, follicular conjunctivitis. There may be pre-auricular and anterior cervical lymphadenopathy. Rounded superficial erosions appear on the cornea. These gradually coalesce forming the typical dendritic figure. Fortunately the cornea is not the usual site for a primary infection since the reaction is usually severe.

This runs its course in two to three weeks, at which time it heals leaving a slight scar. A circulating antibody titer can be obtained in thirty days, reaching its peak in sixty days.

Recurrent dendritic keratitis.—This is the most commonly seen type. The virus which has been lying dormant in the nucleus of the epithelial cells is suddenly released. The nucleus is surrounded by a rather dense nuclear membrane so this must be destroyed or injured in some way to permit the virus to escape. The actual release mechanism is unknown at present. After its release, the virus may be neutralized by the tissue antibodies and the disease fail to develop. One can see the importance of the balance between the virus and the tissue antibodies. Cortisone may have some action in destroying this local immunity. If, however, the neutralization fails, a

dendritic ulcer develops. Clinically, the corneal lesions first appear as a group of whitish nodules on the epithelium with a slight grey infiltrate at the base. These nodules may take a faint fluorescein stain. Soon there appears the typical dendritic pattern. The usual case runs its course in one to two weeks, leaving some scarring.

Disciform.—Occasionally one to one and one-half weeks after the start of the herpes infection, there occur corneal stromal edema and folds in Descemet's membrane. This progresses to produce round, whitish, stromal opacities, keratitic precipitates, and low-grade uveitis. Interestingly, this type of reaction can also occur with some other virus diseases—chicken pox, vaccinia, superficial punctate keratitis, herpes zoster, mumps and small pox. The question arises as to whether this reaction is due to the virus of the specific disease or an actual corneal invasion by herpes simplex. However, the tissue involved is collagen and not epithelial so the exact nature remains unknown. Braley⁴ believes it to be due to a hypersensitivity to the herpes virus.

Metaherpetica.—Usually herpes runs its course and heals, but occasionally it becomes chronic. This results in a diffuse breakdown of the corneal epithelium. Indeed, in some cases even bullae develop. The epithelium is no longer adherent to Bowman's⁵ membrane and in some cases it is lost. This type of reaction may drag on for months. Apparently the local antibodies do not neutralize the virus.

Diagnosis

1. *Clinical.*—This diagnosis is made by finding the typical pictures described above. Sometimes this is difficult so a more accurate laboratory method is often needed.

2. *Laboratory.* (a) Microscopic. The finding of the typical unilocular vesicle in the epithelial cell is diagnostic. This progresses to ulceration and the formation of multinucleate cells and acidophilic intranuclear inclusion bodies.

(b) Isolation. To obtain more positive results this must be done in the acute stage. The fluid from a vesicle is inoculated into susceptible cells of animals and the typical reaction of focal necrosis and intranuclear inclusion bodies is found.

(c) Serology. The complement fixation test is

important in the primary case, since one finds a specific increase in the antibody titer. This is not true in the recurrent type.

Treatment

Treatment of herpes simplex is most difficult and frustrating. Searching through the literature, one finds that the problems existing early in the history of the disease still exist today. Following is a partial list of the antibiotic and chemotherapeutic agents which various investigators have experimented with and found wanting:⁶⁻⁹ aureomycin, achromycin, chloromycetin, erythromycin, magnamycin, terramycin, some atropic hormone, DOCA, estrogenic and androgenic hormones, and influenza vaccine. From the length of the list, one can conclude the problem remains a great one.

The specific treatment for the various facets of herpes as found most effective by most individuals today follows:

Dendritic ulcer.—The cornea is anesthetized with ½ per cent pontocaine hydrochloride and the area of the dendritic ulcer plus 2 mm. is painted with one-half strength tincture of iodine. After the iodine has been in contact with the cornea one to two minutes, it is neutralized with 4 per cent cocaine. One per cent atropine and a local antibiotic solution are instilled and the eye occluded. The pain is controlled by A.S.A. gr. X or codeine grss. Cortisone is contraindicated and may lead to perforation of the cornea.

Disciform and metaherpetica.—The treatment of these complications is extremely difficult. Braley feels that cortisone is of value in disciform keratitis since a hypersensitivity to the herpes virus exists. A solution of 1 per cent sodium iodide with 5 mm. of Lugol's solution per 30 cc. used four times a day should be given a trial. Local antibiotic drops should also be used to prevent any secondary infection. Occlusion for a prolonged period should be tried. Some investigators feel that repeated vaccinia vaccinations have some benefit, but this certainly is not accepted by everyone.

If all these fail and the eye seems to be progressing towards blindness, irradiation should be used. There is no good reason why irradiation should be of value in the treatment of herpes, therefore, it should be used only when all other ave-

PRESENT STATUS OF HERPES SIMPLEX—GILL

nues have been exhausted and only then with absolute patient safety.

Low voltage therapy (x-ray).¹⁰—This type is used only when the disease is extensive. The whole eye is irradiated through the closed lid. A 10 r., 45 K.V., dose is used once or twice a week for four weeks. If at the end of the four weeks the eye is quiet and comfortable the treatment can be stopped. If, however, the eye is white but the corneal ulcer still remains, the switch to Beta irradiation should be made. If no improvement is noted all irradiation should cease.

Beta irradiation.—This is used in the chronic lesions involving the cornea. The cornea only is irradiated as the applicator is applied directly to it. It is not used when severe lid spasm is present or when a marked ciliary congestion exists, since the dose may prove excessive and produce exacerbations of the symptoms. A single dose of 500 r. once a week for four weeks is used. The Strontium applicator is one of choice at present.

The difference between the dosage schedules of the Beta x-ray is due mainly to the difference in the penetrating power of the rays and the volume of the tissue irradiated. There should be no complication if the above set of standards is adhered to.

Results of irradiation at the Royal Marsden Hospital are shown in the accompanying table.¹⁰

The number of patients in this series is small, some experienced spontaneous regression, et cetera, so that evaluation is difficult but it does appear that irradiation is of some value especially when one considers that these were cases where all other therapy had been to no avail.

It is evident from the above, then, that the

therapy lags behind our understanding of the biology of herpes simplex.

RESULTS OF IRRADIATION

| Type | Treated | Relieved | Improved | Failed |
|-----------|---------|----------|----------|--------|
| Dendritic | 20 | 3 | 10 | 7 |
| Disciform | 16 | 3 | 7 | 6 |

Summary

In summary, the natural history, clinical aspects, diagnosis, and the treatment of herpes simplex has been discussed. It appears that the primary disease acts like any infectious disease. Our knowledge of the recurrent type has many gaps.

Treatment of herpes simplex remains one of our most troublesome problems, the solution of which is not found in the antibiotics or chemotherapeutics at our disposal at this time. We must look to future research for the final answer. Let us hope the puzzle will soon be solved.

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DERMATITIS OF THE HANDS

(Continued from Page 538)

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Use of Relaxin in Obstetrics

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WITHIN the past year, a hormone known as relaxin has been put on the market. Although it is, in a manner, still in an investigative status, the suggestion is that it will be an important drug in obstetrics.

The purpose of this paper is to review the work that has been published on this hormone and present a study that Dr. Paul Larson, Dr. Edgar Ingalls and myself have made on its use in spontaneous labor at term.

History

The history of relaxin began thirty-two years ago when Dr. Fredrich Hisaw observed that the narrow pubic bones of the female pocket gopher were resorbed in the adult stage to make bearing of young anatomically possible. In the ensuing years he was finally able to isolate the responsible factor as a water-soluble protein which was secreted by the corpus luteum. He described the substance as a "relaxing hormone" and later called it relaxin. Further investigation showed that this third ovarian hormone caused diminished contractions of rat uteri and increased the dilatability of cow's uterine cervix.

Studies then turned to the human where it was found by Pammerenke that relaxin was present in the serum of pregnant women. Penkoff and his associates demonstrated the safety of administration, even in very large doses.

The problem of supply has been difficult. To date, extraction of the hormone from sows' ovaries has been the only source. Some 200 pairs of such ovaries are necessary for one course of treatment in a threatened premature labor, thus, its high cost. Efforts are being made to produce the drug synthetically. The price in the past month has been reduced to one fourth of its original high cost.

The story of relaxin's development has been another noteworthy example of the long and arduous efforts of research investigators to add to our knowledge and armamentarium of treatments.

Consideration has been given to the use of relaxin as a means of halting premature labor, of softening the cervix in prolonged labor or in preparation for induction of labor, and to shorten spontaneous labor in the term pregnancy.

Abramson and Reid first reported its use in premature labor, citing prolongation of gestation to thirty-six or more weeks in five such cases.

Folsome, et al reported, in the August, 1956, issue of *Obstetrics and Gynecology*, a delay of labor in twenty-two out of forty women in premature labor. A total of 936 additional days of gestation were obtained with a fetal loss rate of 25 per cent compared to 86 per cent in the control series. The dosage schedule used was varied, but settled on a regime of 80 mgm. (or 4 cc.) intramuscularly as the initial dose and 40 mgm. (or 2 cc.) at four-hour intervals for forty-eight hours following cessation of contractions. Conclusions were that relaxin was of help in halting premature labor especially in the twenty-ninth through the thirty-second weeks of pregnancy.

McCarthy et al. from the University of Pittsburgh reported in the *American Journal of Obstetrics and Gynecology*, July, 1957, issue, a series of fifteen cases of premature labor at twenty-four to thirty-four weeks with an average of thirty weeks. In eight cases, labor was prolonged more than one week; whereas, in his control, only one pregnancy continued for more than one week. In the remaining seven, three had placental pathology and the other four had ruptured membranes. Two of their group with ruptured membranes developed intrapartum fevers and both babies died. They concluded that relaxin does have an inhibiting effect on premature uterine contractions, but that it appears to be contraindicated in the presence of premature rupture of membranes and in cases where placental pathology or severe maternal complications, such as toxemia, are present.

We have only used relaxin for this purpose in one case—that of a decompensated cardiac pa-

RELAXIN IN OBSTETRICS—ROTHNEM ET AL

tient from out of town who was referred in to a local internist. This primigravida patient was 2 cm. dilated and judged to be in active labor. Labor was halted in this instance.

The second suggested use of relaxin in obstetrics is to soften a thick, firm cervix of a patient in prolonged labor or to prepare for induction of labor. Eichner described such softening of the cervix "in almost all" of the seventy-eight

TABLE I. COMPARISON OF TIME INTERVAL 4 to 5 cm. up to 10 cm.

| Hours | Releasin | Control |
|-------------|----------|---------|
| 1-1 | 4 | 3 |
| 1-2 | 9 | 11 |
| 2-3 | 4 | 5 |
| 3-4 | 3 | 1 |
| 4-5 | 0 | 2 |
| 5-6 | 1 | 2 |
| 6 | 4 | 1 |
| Total cases | 25 | 25 |

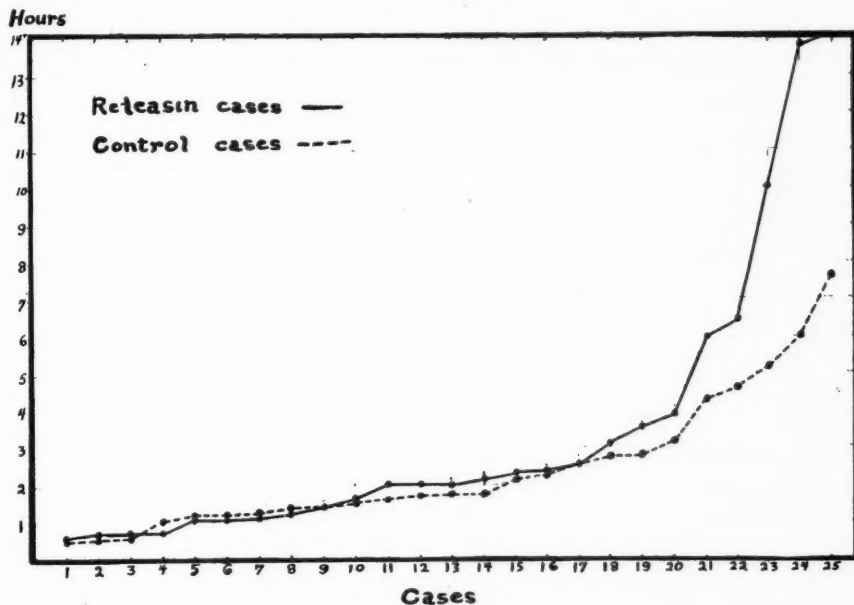


Fig. 1. Comparison of time interval in labor (4 to 5 cm. up to 10 cm.) in fifty cases.

patients in whom he studied the effects of using relaxin. A true appraisal of this effect would obviously be most difficult.

Third, it has been suggested that the use of relaxin might shorten labor by its effect upon the cervix and the pelvis as noted in animals by research teams. In one report, it was the impression of the observer that its use produced "precipitous deliveries." Because of this observation, the Warner-Chilcott people desired to know if this was actually true. We were asked if we would wish to give Releasin (their proprietary name for relaxin) a clinical trial. Such an evaluation has obvious problems. Criteria for a study were set up to include only primigravida patients of thirty-seven to forty-three weeks gestation in whom labor had started spontaneously. Malpositions and multiple pregnancies were excluded.

Demerol and Scopolamine were used as the only other drug, and the administration preceded the use of the Releasin in all cases. The dosage of Releasin was 20 mgm. (or 1 cc.) intramuscularly at 4 to 5 cm. dilatation repeated at three-hour intervals until dilatation was complete. Contractions had to be at intervals of three minutes or less and lasting forty-five seconds or more. The range of dilatation was allowed because it would be obviously impossible to accurately determine a specific dilatation, and, furthermore, it would be impossible to time the examination that precisely. An obstetrical resident was on hand to follow and check any questionable findings by vaginal examination. Here, I would like to give credit, to Dr. Evan Constantine, a resident on obstetrics at Northwestern Hospital, for his conscientious efforts and to Dr. Angel Perez who worked with him.

Method and Results

Fifty consecutive cases were thus compiled with the exception of a breech, a twin pregnancy, a face presentation and two cases in which dilatation had exceeded the limit before recognition. Alternate patients were given the Releasin. When patients were determined completely dilated, they were transferred to the delivery room where vaginal examination was done.

The time interval from administration of Releasin at 4 to 5 cm. up to 10 cm. was compared with the corresponding period in the control group (Table I).

There were thirteen in the Releasin group and fourteen in the control group who had a moderately rapid course (two hours or less) in the second half of the cervical dilatation and seven in the Releasin group and six in the control group whose course was average (two to four hours in length).

Figure 1 illustrates the length of labor of the individual cases in the Releasin group by the solid line and the control group by the dotted line. The two curves begin with the shortest labor in each group.

The impression gained is that there is no notable difference in the length of time between the two groups. The suggestion is that relaxin does not shorten the course of labor when administered after effacement has been completed and dilatation started.

No systemic ill effects were noted following administration of Releasin. No effort was made to compare the second stages of labor, but the impression was that there was no notable difference.

Previous reports have described a temporary

decrease in uterine contractions following its use. This was not definitely apparent in our series. In only one instance was there a significant change; while in six others, there was a slight decrease. The Demerol-Scopolamine, administered shortly before, could have been the factor responsible. Kelley, using an electric intrauterine tocometer, measured the contractile pressures in the fundus, isthmus and cervix in twenty-five patients at term who had received Releasin during labor—only one showed decreased contractile pressure. Dosages of up to 320 mgm. were used.

Summary

In summary, one might say that relaxin is of help in halting premature labor except in cases with placental pathology. Second, in the case of premature rupture of the membranes associated with labor, the inhibiting of contractions may predispose to intrauterine infection, thus the advisability of the use of relaxin in such instances should be carefully considered. Third, the suggested ripening of the cervix would certainly be of value in cases where induction of labor is desired or where spontaneous labor has occurred in the presence of a firm thick cervical structure. However, this possible effect from relaxin has not had a thorough clinical evaluation. Last, relaxin does *not* seem to be of value in shortening the labor in those cases where effacement has been completed and dilatation has started, at least in the dosage we used in this survey.

Clinical investigation of this extract is continuing. New uses are now in the process of being investigated according to the people from Warner-Chilcott. No doubt, we will hear more about relaxin in the future.

DEAFNESS IN CHILDREN

All children who do not react to sound, do not copy speech or do not speak articulately from the time they are two years old should be examined to find the cause, Dr. G. Koenig told the Society of Physicians at the recent annual meeting in Vienna. A fairly accurate audiogram can be made for children at age two, but better results are obtained after they reach the age of three.

If a hearing defect is discovered, the child should be given special articulation exercises. Later systematic hearing training is advised. As soon as the child reacts to hearing impressions, a hearing aid is provided. Even in children with no residual hearing but with normal intelligence a primitive phonetic communication may be achieved.—Foreign Letters, *J.A.M.A.*, June 14, 1958.

The Patient with Hip Fracture

Surgical Care

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FRACTURES in the aging population become more of a problem with increased life expectancy. The most frequent and most disabling fracture is that of the hip. It is a physical and emotional disaster to the patient and an economic liability to his family and/or the community.

The catastrophe can be minimized by skillful handling. Poor handling is associated with prolonged morbidity and invalidism.

This article is concerned with the current blind hip-nailing technique of an orthopaedic surgeon. The overall care from injury to rehabilitation is presented. One specific surgical technique for the intracapsular fractures and one for the intertrochanteric fractures are outlined. Exceptions to the technique are impacted intracapsular fractures, undisplaced intertrochanteric fractures not requiring surgery, irreducible intracapsular fractures requiring open reduction, and the extensively comminuted intertrochanteric fractures best handled by continuous traction.

Initially, the fracture is a closed (simple) one. Open surgery exposes the fracture to hazard of infection. The infection rate should not exceed five per cent even in the aged. Large series reported suggest that 90 to 95 per cent of the intertrochanteric fractures should heal with satisfactory function. In intracapsular fractures, internal fixation should give 60 to 70 per cent good results. Non-union and aseptic necrosis of the head are the great problems in intracapsular fractures. Because no prosthesis functions better than the patient's healed femoral head, immediate prosthetic replacement in acute fracture is not advocated.

The Diagnosis

The diagnosis is usually easy. The patient is unable to lift the involved extremity. It is painful to passive motion, shortened, and externally rotated. The patient is moved to the hospital by ambulance where pelvic x-ray and a lateral x-ray of the injured hip are taken. There is gross displacement in the majority of patients. When the fracture is diagnosed clinically but not confirmed

radiologically, the patient can be treated expectantly. As soft tissue pain relents, further x-ray studies will confirm the diagnosis. Fractures of the pubic rami and acetabulum may be indiscernible clinically from the intracapsular and the intertrochanteric hip fractures.

Any displaced fractured hip should be considered for early operative fixation. Operation within twenty-four hours of the injury has been found best for the patient. Barring cerebral stroke as the cause of the fall, the patient is probably in his best general health the moment prior to the injury. With minimal supportive care after a routine history and physical examination an acceptable operative condition can be achieved for the patient.

Preoperative Preparation

Physical changes associated with age are assessed. Special attention is given the cerebral, cardiovascular, hemopoietic, pulmonary, and endocrine systems. Routines include blood and urinalysis. The electrocardiogram is frequently ordered. Digitalis and insulin are prescribed as indicated. Part of the preparation may include catheterization and placement of an indwelling catheter.

The hemoglobin concentration in the blood is a misleading figure. If the patient has lain for some hours in pain, he may be dehydrated. The total circulating hemoglobin will appear falsely high. There is no doubt of low hemoglobin when the accurate report is low.

The patient with an intracapsular fracture does not lose much blood into the tissue. The capsule soon fills with blood and prevents further bleeding. The patient with the intertrochanteric fracture often has an extensive swelling of the thigh and purple ecchymosis in the buttock at the first examination. This patient may have lost a pint or two of blood into the thigh as a result of the injury. He may need preoperative transfusion due to blood loss.

Blood should be replaced with caution even in

THE PATIENT WITH HIP FRACTURE—SPONSEL

those with a low hemoglobin. The patient may have been living many years at a level of 10 gm. of hemoglobin. To insist that each patient have at least 11.5 to 12.0 gm. of hemoglobin prior to sur-

Reduction of Fracture

In reducing the fracture the patient is placed on the fracture table, and the pubic area is firmly approximated to the pelvic post. Traction is held

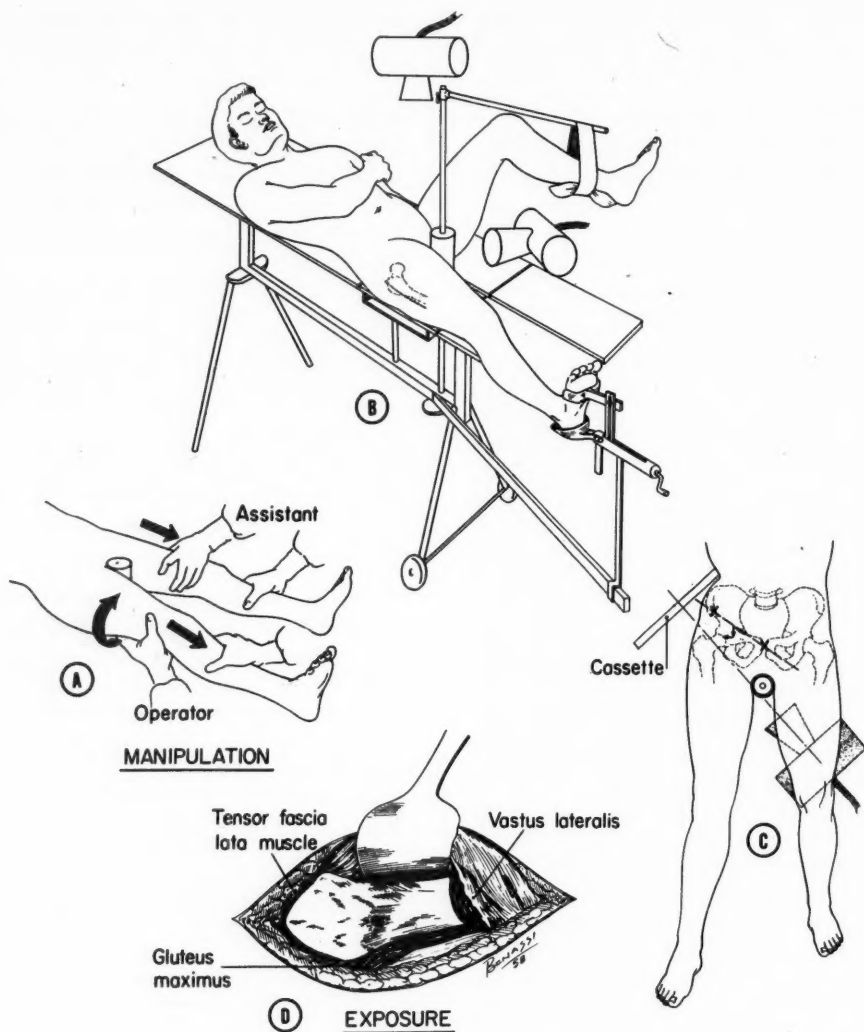


Fig. 1.

gery is not good surgical practice. Heart failure prior to surgery has been precipitated by overloading with blood transfusions. Many patients have come in with an initial reading of 12.0 gm. only to have 9 or 10 gm. after hydration.

The important factors are to look at the patient, evaluate the blood loss due to injury, return that amount, and replace any lost at surgery.

on the sound leg by the assistant in order to stabilize the pelvis (Fig. 1A).

In the intracapsular fracture, the involved leg is further externally rotated with the traction hand applied above the knee at the level of the femoral condyles. The opposite hand may steady the foot from dangling. With the thigh in external rotation, mild to moderate traction is applied. The

THE PATIENT WITH HIP FRACTURE—SPONSEL

younger the individual, the more traction is necessary. During this phase, the whole thigh is jiggled up and down in order to loosen the fracture. When one thinks that he has gained the length of the bone, the thigh is strongly internally rotated. In the intracapsular fractures, this maneuver of internal rotation is quite forceful. All the manipulating force is applied above the knee to prevent straining of the ligaments of the knee. In the intracapsular fractures, the leg is slightly abducted 10 to 20 degrees and the foot is placed in the stirrup with the whole leg in considerable internal rotation (Fig. 1B).

In intertrochanteric fractures, the leg is manipulated in external rotation with longitudinal traction. It is jiggled to loosen the fracture. Internal rotation is not so forceful. In fact, it is probably better to bring the knee to the vertical position, that is, facing the ceiling. It is possible to gain too much internal rotation, especially in comminuted intertrochanteric fractures. Fixation in this position will give a permanent deformity of internal rotation of the leg.

The patient is now ready for x-ray examination to check on the reduction.

Technique of Radiography

Good quality radiographs in the antero-posterior and lateral views are essential. If the lateral view is poor, one cannot be sure of reduction. Further, one cannot be certain of the placement of the internal fixation apparatus. Therefore, this step is fundamental in obtaining satisfactory fixation and final healing. *Incomplete reduction and incomplete fixation, as shown on the lateral projection of the radiographs, are the most common technical errors observed.*

Rather than widely abducting the sound hip and putting the x-ray tube between the legs, more satisfactory radiographs can be obtained by flexing the normal hip almost 90 degrees and the knee to 90 degrees (Fig. 1B). The tube is brought under the normal thigh and directed more toward the head of the patient. In this way, the width of the tissue through which the x-ray must pass is minimized. The x-ray beam is more vertical to the neck and intertrochanteric area of the femur. The antero-posterior view is taken with the tube directly over the hip and the cassette directly under the hip. The head of the femur is localized by drawing an imaginary line between the anterior-superior spine and the pubic symphysis. If one

bisects this line, that is, selects a point midway between these two points, drops toward the foot one inch and goes laterally one inch, his finger, for practical purposes, will be over the head of the femur (Fig. 1C). When the lateral view is taken, one should be certain that the cassette is put at right angles to the x-ray beam. The cassette is pushed well into the flank superior to the iliac crest. This technique may be carried out with the use of two x-ray tubes or one. When one tube is used, it necessarily will mean some delay in the procedure. The hip may be scrubbed while waiting for the development of these films.

Anesthesia

The type of anesthesia is best determined by the ability and the custom of the individual in charge of this phase of surgery. It may be sodium pentothal. This may be supplemented by local anesthesia into the hip joint and through the skin and operative area. Some surgeons prefer low spinal block anesthesia. The surgeon should impress upon the individual giving the anesthesia that a minimal amount is desired. There is not much need for relaxation in older people. The problem is different than when the operation involves the abdomen. Once the manipulation is complete the anesthesia can be quite light. If there is any doubt about the minimal general anesthesia, one can infiltrate the operative site with local anesthesia.

Fixation Apparatus

In the intracapsular fractures, it has been my practice to use Moore pins in sets of four, making quadrants of the insertion of these pins (Fig. 2). I have usually used a 5/32 inch pin at the depth of between 3½ and 4½ inches. These pins are available in 5, 6, and 7-inch lengths. The pins are preferred because they are set with the hand drill.

The desired depth of the fixation apparatus in the head in intracapsular fractures is within ⅛ or ¼ inch of the articular surface. Investigations by others have shown that the (a) central or (b) posterior and inferior portions of the head are desirable sites for the placement.

As these are drilled, one penetrates the outer cortex. There is a tendency to push through the intertrochanteric area where there is very little cancellous bone. At about 2½ inches or so, the nail engages the head. If one further drills this nail with increasing resistance into the head a distance of 1 inch, it will be about the right depth in

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the head. It is very desirable to have one or two of the inferiorly placed pins, as shown on the antero-posterior view, parallel to and resting on the inferior neck. The position on the inferior

ment of the Smith-Peterson nail. The object of this is to hold the head and neck in the reduced position as the nail is driven into its desired position.

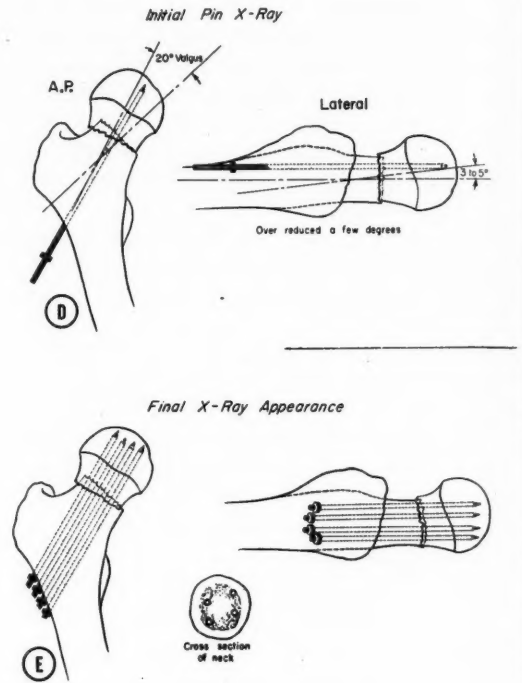
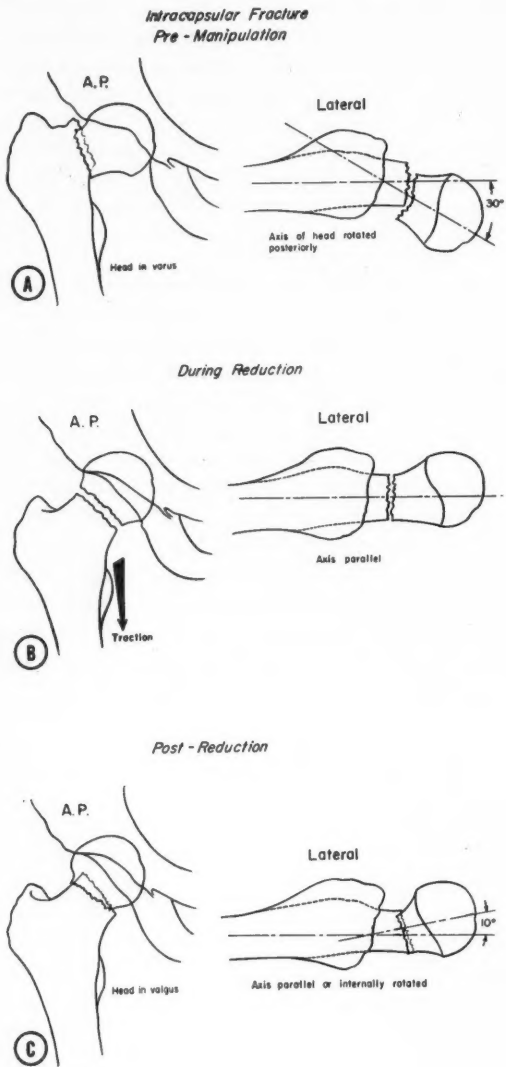


Fig. 2.

In the intertrochanteric fractures, I prefer the use of a fixed angle nail with a multiple hole plate (Jewett nail) (Fig. 3). The length of the plate that goes down the shaft of the femur is dependent on the level of the fracture.

It is preferable to have the nail part of the apparatus go no further than the center of the head. It is safer to keep this nail portion caudad in the antero-posterior view and posterior or central in the lateral view. Because the nail is fixed to the lateral shaft, shortening at the fracture line may permit the pin to penetrate the head and acetabulum (Fig. 4B). This tendency is minimized by keeping the tip of the nail in the center of the head. By holding the nail over the x-ray silhouette, one gets the general idea of the angle of introduction. This is supplemented by observation at surgery.

Other fixation apparatus with the individual nail or screw going into the neck of the femur,

neck acts as a support to prevent varus shift on the head by the muscular contraction.

The Smith-Peterson nail has been an acceptable fixation apparatus for intracapsular fractures for many years. It is possible to tilt the head and lose the reduction when driving this nail. Should the nail be used, it is wise to drill a Steinmann pin or stout Kirschner wire superior to anticipated place-

followed by the attachment of a plate along the lateral side of the femoral shaft, is not as reliable a fixation. Great stress occurs at the angle where the neck fixation and plate join. Wood screws and bolts tend to loosen at the angle permitting the head and neck to go into varus in many instances.

Criteria for Adequate Reduction

In intracapsular fractures, the head should be over-reduced to a valgus position. At times, anatomic reduction must be accepted (Fig. 2C). The varus position never should be tolerated. This permits shearing at the fracture site and displacement. *The desired position* of the head on the antero-posterior view is a *valgus position*. This can be obtained in most patients by utilizing a moderate amount of traction with the leg externally rotated and completion of the internal rotation as indicated above. If this is not demonstrated on the radiograph, it is desirable to remanipulate so that the head is in valgus related to the neck. On the lateral projection, the head must be in normal alignment with the neck or even over-internally rotated. If this is not so, or if the radiograph is not clear enough to show this, further radiographs must be taken until one knows definitely the relationship of the head to the neck. Slight internal rotation of the neck on the head is desired. Should the head not be in good position relative to the neck in this intracapsular fracture, manipulation is unsuccessful; the whole procedure should be terminated prior to any incision. If the surgeon is experienced in intra-articular surgery of the hip, an open procedure may be performed. Prosthetic replacement is considered. If the surgeon is not acquainted with intra-articular surgery of the head and neck of the femur, it is better that the attempt at internal fixation be terminated at this time and further surgical consultation be obtained for later reduction and fixation. This is advocated strongly because poor reduction and/or inadequate fixation are worse than none and lead to certain failure. The surgeon must recognize his limitations if he is to render the greatest service. Except under unusual circumstances, transfer of the patient to a larger center is of little hazard.

In the intertrochanteric fracture, the antero-posterior view should show restoration of smooth curves on the shaft and the inferior neck (Fig. 3B and C). The level of the great trochanter should be at its normal position about $\frac{1}{2}$ or $\frac{3}{4}$ inch below the lateral lip of the acetabulum. Normal can be determined by comparing with the pre-

operative pelvis radiograph. On the lateral radiograph, there may be some posterior shift of the shaft of the femur at the fracture, especially in heavy thighs. It may be necessary to pull this fragment anteriorly at the time of the open fixation. It is possible to manipulate the intertrochanteric fractures at the operative site through the lateral exposure.

The detached lesser trochanter is not reduced or fixed.

The Exposure

The exposure for blind nailing of both the intracapsular and intertrochanteric fractures is essentially the same, although that for the intertrochanteric is extended further down the thigh (Fig. 1D). A lateral incision is made over the greater trochanter. In the intracapsular fracture, this incision is about 3 to 4 inches long. The fascia lata is exposed, and the tensor fascia muscle is incised for a distance of about 2 inches. When this muscle is found, one is certain that he is in the right level. At this time, one should look for arterial bleeding from division of the lateral femoral circumflex group. The hand is slipped posteriorly to the posterior attachment of the vastus lateralis. This muscle is bluntly dissected from the femur. It is necessary to cut the trochanteric attachment with a pair of scissors a distance from 1 to 2 inches. This will permit the laying anteriorly of the vastus lateralis. This exposes the lateral femoral shaft in the trochanteric area.

Fixation

Intracapsular Fracture.—Austin Moore's pins are used. They are $\frac{1}{8}$ or $\frac{5}{32}$ inch in diameter, with a pyramidal point which serves as a drill. The shaft is smooth. The shank at the proximal area is threaded for an attached nut. The pin is inserted into a hand drill and drilled into position. When the desired position is obtained, the nut is twisted to the lateral cortex. With the nut tight on the cortex, the pin may be struck to impact the fracture. A heavy bolt cutter is necessary to cut the pin near the nut. The crimping effect of the cutter prevents the nut from coming off. The nut prevents inward migration of the pin.

The first pin is inserted by drilling through the lateral cortex at an angle anticipated to engage the head in its (a) *central* or (b) *inferior* and posterior position. Radiographs in the antero-posterior and lateral views are taken. After study of the actual position of the pin and its ideal posi-

THE PATIENT WITH HIP FRACTURE—SPONSEL

tion, one can insert one, two, or three more. Radiographs are taken to guide the operator in proper positioning and depth of insertion (Fig. 2D

Four Moore pins are used in parallel to form quadrants in the neck and head of the femur. Being parallel, there is no binding to prevent the

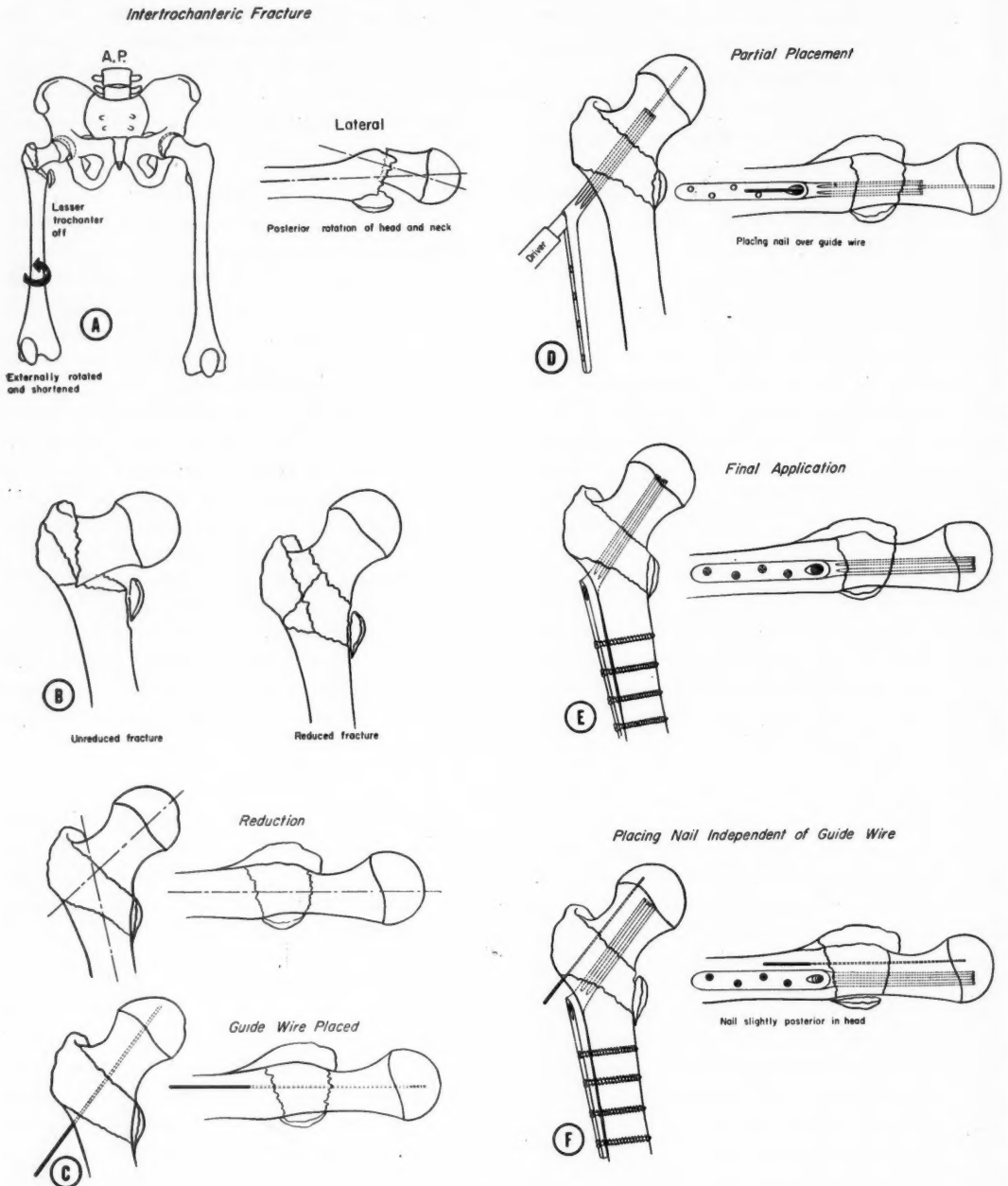


Fig. 3.

and E). After stabilizing the head with one or two pins, the fracture is impacted by blows on the lateral trochanteric area.

head from settling on the neck as the fracture line is absorbed.

Intertrochanteric Fracture.—In the intertro-

chanteric fractures, a drill hole somewhat larger than a Kirschner guide wire is drilled approximately 1 inch below the roughened prominence of the lateral trochanter. Through this opening, a Kirschner wire can be lightly directed into the intertrochanteric and neck area of the hip. One can feel the posterior and anterior cortex of the neck as well as the inferior and superior. He can then judge the direction he wishes to place the wire toward the head. This can be driven or drilled in a depth of about $3\frac{1}{2}$ inches. Antero-posterior and lateral views are taken to determine the proper position of this guide wire. By comparing the length remaining outside the cortex with a full length of normal wire, one can determine easily the depth at which the wire has engaged the head. The desirable nail length can be judged. Usually a $3\frac{1}{2}$ -inch Jewett nail is the proper length.

Radiographs in two planes indicate the position of the guide wire. If it is in good position relative to the head and neck and if it is the proper angle for the Jewett nail, a $\frac{1}{2}$ -inch hole is reamed in the lateral cortex. This is done with a cannulated reamer directed over the guide wire. The aperture may be made in the lateral cortex with an osteotome. Frequently, the guide wire is not placed perfectly. In such an instance, the cortical opening is made independent of the guide wire opening. The Jewett nail is not guided over the wire but alongside it (Fig. 3F). The nail is tapped 1 inch into the head. Antero-posterior and lateral views show the relationship. The nail should not go beyond the center of the head when completely driven home. Care should be taken to prevent over-drive of the nail in the head. This is especially true in comminuted intertrochanteric fractures. Over-drive pushes the nail into the acetabulum. It does not allow the nail to stay in the head if the fracture shortens (Fig. 4B). In certain comminuted fractures, the Jewett nail acts as a supporting strut between the head and the shaft. The intervening comminuted fragments are unstable and simply encircle the central portion of the Jewett nail.

Fractures involving the subtrochanteric area (area below the less trochanter) have an unstable nature. The plate should be longer than usual. The muscular forces tend to place the whole head, neck, and trochanteric area in varus. Unusual stresses will cause the plate to break at the angle, the screws to break at the plate, or the screws to

pull out of the bony cortex. Such internally fixed fractures should be treated with a mild (6 to 8 pounds) skin traction for several weeks. These

Non-Operative Treatment With Impacted Fracture

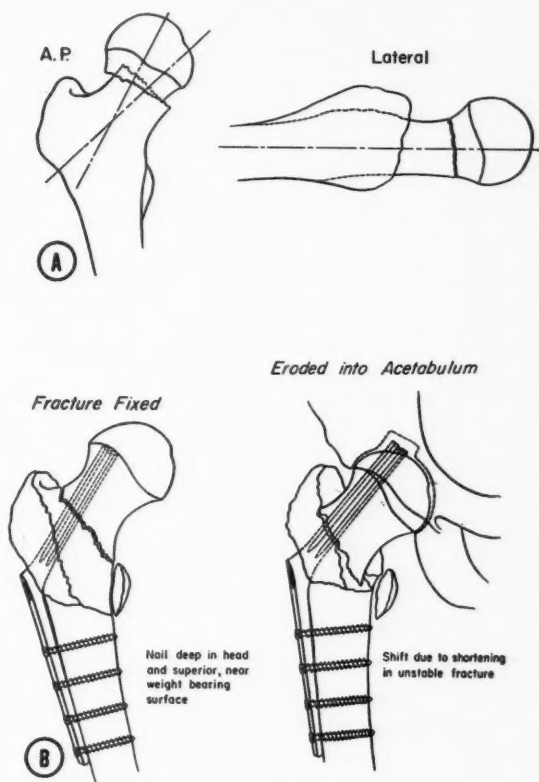


Fig. 4.

patients may be permitted out of bed a few hours a day during the traction period. At all other times, the traction should be maintained.

Non-operative Type Hip Fractures

The abducted impacted intracapsular hip fracture may be treated by non-weight-bearing ambulation. Criteria for selection of cases are demonstrated in Figure 4A. The head should be in valgus in the antero-posterior view. There should be no, or very little, posterior rotation of the head in the lateral view. Clinically, the patient should have considerably less pain than one with a displaced fracture. Many patients having impacted fractures come in a few days after injury, having walked a variable amount on the hip since the fall.

On examination, the patient can lift the whole extremity against gravity. Internal and external rotations are not greatly restricted.

Those with impacted intracapsular fractures are gotten into wheel chairs in a few days. If in moderate pain, 5 to 8 pounds of longitudinal traction may be used a few days. Radiographs are taken at weekly intervals to guide the treatment. Should there be a slow or sudden change in the position, immediate operative fixation with Moore pins is considered. In cases of doubt, the tendency is to insert the Moore pins. Impacted fractures in good position have been disimpacted and rotated while driving the Smith-Peterson nail. Avascular necrosis and non-union are unusual in these impacted fractures.

Follow-up care is similar to that of the fracture which has been reduced and internally fixed.

Occasionally, one sees a non-displaced linear fracture in the intertrochanteric area. This may be treated in traction with daily leniency in getting out of bed, in a chair or with crutches.

Grossly comminuted intertrochanteric fractures may not be amenable to structurally strong internal fixation. If internal fixation will not permit freedom with wheel chair or crutches, operative intervention may be of no value, or even detrimental. In such cases, initial decision for continuous traction until the healing is sound is the best treatment. Ten to fourteen weeks is sufficient for bony healing. Architecturally unstable fractures are often fixed to permit ambulation which may be life-saving. The fracture may shorten, causing the Jewett nail to penetrate the head and acetabulum (Fig. 4B). When the bone is consolidated, the nail may be removed.

Postoperative Care

Routine treatment includes getting the patient out of bed in a day or two. Elastic stockings are advised when the patient is sitting. While the patient is in bed, special attention is paid to turning him every two hours until he is able to turn himself. An overhead bar or trapeze is a great help. The patient is advised to "chin" himself half a dozen times an hour. Antibiotics are not ordered simply as prophylactic for the operative area. Clinical indications are necessary for their administration.

General medical needs are met in the usual fashion. Common problems are mental, cardiac, pulmonary, enteric and urinary.

Mental problems may have been great for the patient prior to the hip injury. Confusion, disorientation, insomnia, and discouragement are common. The best treatment is early operation and mobilization. Encouragement, good food, and nursing care are important. Some medications are helpful. Daily observation for cerebral thrombosis is made.

The cardiac situation usually is one of abnormality secondary to aging. The heart has withstood all previous troubles and will usually survive the injury and surgical procedure. When heart symptoms have been present, a preliminary electrocardiogram may be made. The patient may be digitalized rapidly, even during the surgery by intravenous digitalizing agents.

Hematologically, the patient may need urgent restoration by transfusion. Iron and vitamins are helpful.

One should constantly look for vascular thrombosis in the extremities. Prophylaxis by active exercise is best. The feet should not be bound by heavy bed clothing. A footboard or cradle to support the bedding is helpful. The normal leg should be moved as much as possible. The foot on the affected side is pumped up and down at regular intervals. Sound fracture fixation will permit the knee and hip motion on the injured side, as the soft tissue soreness subsides in a few days. Anticoagulants are prescribed as indicated but are not given in anticipation of thrombosis.

The diet is increased gradually. Many of the patients must be fed. Regaining of strength is dependent on providing a normal balanced intake. Supplementary proteins and anabolic sex hormones may be helpful. Mild cathartics and enemas are utilized.

A high percentage of the patients have urinary tract infection and/or poor control. Indwelling Foley catheters are used on mildest provocation. Fluids are maintained by mouth or parenterally to assure 500 to 1,000 cc. daily urine output. Urinary antiseptics are administered during the use of the catheter. The catheter is discontinued on a trial basis after a few days.

With the above care, bed sores are not common.

Convalescent Care

Walking with crutches is taught to those who appear strong enough. This is a minority in the age group over seventy years. Non-weight bearing in walkers is not advocated.

Wheel chairs are used for almost every patient. Knees must be flexed to right angles when the patient is in the chair. Feet are in a functional position on the foot rest.

Motion of the legs without weight-bearing is encouraged by the patient sitting in a walker and scooting about.

Each patient is encouraged to lie face down in bed two or three times a day for ten to thirty minutes. The purpose is to stretch the anterior hip structures and maintain the ability to extend the hips. Prolonged recumbency and sitting tend to contract the hip flexor area so that folk cannot stand straight when the bone is healed.

Hip exercises are advised for patients who are expected to become ambulatory. These are started on a firm surface in three or four weeks after surgery. The patient is recumbent. He lifts and lowers the whole lower extremity with the knee straight. While lying on his back, he can strengthen the hip flexors. While lying on the side of the normal hip, the abductors are exercised. Extension of the extremity in face-down position strengthens the spine and hip extensors. The patient is informed that:

1. Exercise hastens healing by improving circulation.
2. Exercise strengthens the muscles used in walking. Indeed, hip muscles that cannot exercise the limb against gravity will not be able to stabilize and hold the body on weight bearing.
3. Exercise helps the overall body economy.

Criteria for Bony Healing

Radiographs of the hip in the antero-posterior and lateral positions are taken in office, hospital or home (portable units) at four to six-week intervals. Standard positions are essential for comparing radiographs.

Intracapsular Fractures.—With each visit, the doctor should note increased function in the whole extremity, whether union is progressing, and whether the patient is helping himself.

The radiograph at monthly intervals will show some femoral neck shortening and extrusion of the pins at the lateral femoral shaft. An individual pin may drop out farther than normal neck shortening requires. Bursal formation or hematoma laterally suggests extrusion of a pin. When this happens, one must suspect motion at the fracture site and delayed healing. If all pins begin to extrude from the head, one should re-evaluate the

need for surgical intervention, such as osteotomy, to change the fracture line to one of impacting forces rather than shearing forces of vertical fracture. Decision should be made before the fracture relationship falls apart. Loose pins are removed using local anesthesia.

The hip is considered undergoing satisfactory healing if:

1. The head is still in valgus.
2. The neck is underneath the head supporting the head.
3. The pins are extruding normally in the trochanteric area as the neck shortens.
4. Bone is in continuity at the fracture line.
5. Metal is in the operative relationship and not loosening in the head and shaft.
6. Lateral radiographs show reduction maintained.
7. No signs of avascular necrosis are found in the head.

When the clinical and x-ray findings suggest satisfactory progress, partial weight bearing may be started four months postoperatively.

In those patients originally thought to be healing but where the neck continues to shorten, one suspects fibrous union. This is usually accompanied by increasing varus of the head. Such patients should be taken off weight bearing; they usually complain of hip pain. Evaluation should be made of osteotomy to change the fracture angle. Bone grafting may be performed.

Condensation of bone at the fracture line suggests osteonecrosis and neck collapse.

When monthly radiographs show progressive healing, greater function and more weight bearing are permitted. Intervals for general and x-ray examination are lengthened. Prognosis should be guarded even in face of apparent success. This caution is followed pending late vascular and arthritic changes in the head.

Intertrochanteric Fractures.—The intertrochanteric fracture is usually healed firmly enough for beginning weight bearing in ten to twelve weeks. The patient should be able to maneuver the hip and leg as union is occurring. Pain will be minimized. Motion should be about three-fourths normal.

The radiographs should be compared serially. Healing is progressing if:

1. The relative position of the fragments and the fixation metal have not changed appreciably.

THE PATIENT WITH HIP FRACTURE—SPONSEL

2. The nail does not penetrate the head into the acetabulum.
3. The plate or screws are not broken.
4. The metal has not shifted or loosened in the bone.
5. Softening of the fracture line and callus are seen.
6. New bone formation is prolific.

If one feels that bony union is present, weight bearing may be started while support is aided by crutches or walker. At first 25 to 50 pounds of weight is advised. The patient may get the sensation of the right amount of weight to be placed on the foot by testing the prescribed weight bearing on the bathroom scale. Usually, discomfort in the knee, foot, and ankle will prevent overuse. As time goes by, weight may be increased.

The next radiograph in four to six weeks is used to determine the increase in function. This should show further callus and no change in the position of the fragments and metal fixation.

Should the nail penetrate the head, the nail may be removed after the fracture is healed.

Increased function is deferred, if there is doubt as to union.

Comment

The surgeon should become adept at one or two methods for reduction of each, the intracapsular and the intertrochanteric fractures.

The surgeon should analyze his hip patients generally and specifically prior to surgery. He must be sure of his help and equipment. When

he is confident that the fracture is one which he can handle competently, he may proceed. When the fracture appears unusual or complicated, he should seek help. Although fixation within twenty-four hours of injury is advocated to avoid severe complications, early poor surgery is a greater hazard. The patient can tolerate an ambulance ride better than he can inefficient surgery.

The frequent occurrence of hip fracture in an aging population necessitates efficient surgery throughout the state. In smaller centers, it is suggested that one or two surgeons develop special skill in the handling of hip fractures.

The primary operator in hip surgery has the best opportunity for success. He must be able to accomplish good reduction and fixation. When such services are not available, the patient should be transferred elsewhere.

Care is not complete with soft tissue healing. Success is not achieved because the patient survives the fracture and operation for several months.

The patient has a successful result when he is able to walk and resume normal activities. Certainly, some patients will have a limp due to muscle atrophy. There will be a mild limitation of motion. The patient may need a cane or crutch for balance.

Hip fracture is a devastating injury. Early fixation and mobilization minimize its toll.

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AIR POLLUTION AND THE PUBLIC HEALTH

Air pollution is a problem resulting usually from population pressure. The steady increase in the demand for energy has had a profound effect upon fuel resources, which in turn affect pollution by discharge of man-made pollutants into the atmosphere. In the United States, our energy demand is increasing at 3 per cent annually which is apportioned at about 32 per cent for heating (and cooling), 11 per cent for process heating, and 57 per cent for work heat (power stations, etc.)

Within the last thirty years, we have had three severe fog disasters—Meuse Valley in 1930, Donora (Pennsylvania) in 1948, and London in 1952. In each case, the air temperature was close to freezing; the period of stagnation and temperature inversion was natural and expected from time to time.

Britain's prolonged fogs are infrequent although undeniably serious from a public health standpoint. Los Angeles' troubles occur some forty to eighty times a year, and only in warm weather. Los Angeles has shown that its chemical "smogs" are linked up with the exhaust gases from automobiles and chimney discharges from power stations. The chief offender seems to be the

nitrogen oxides, products of combustion both from motor vehicles and from industrial processes.

In Britain, sulfur dioxide is recognized as an expected contaminant of power plant effluents and concentrations are controlled by scrubbers or by special absorbers. It is natural, therefore, that newer industries, like petroleum refineries, should take warning from the edicts against excess sulfur dioxide. The refineries in our west, particularly in the Los Angeles basin, began desulfuring their petroleum before public opinion suggested it.

Damage to vegetation by pollution has been a serious problem in the United States. In modern cities such as Los Angeles, London and Paris, damage to plant life can occur when gasoline consumption exceeds a definite figure. In Los Angeles, this critical figure was reached about 1944 and is now being attained in London and in Paris.

Clearly, the problem is rendered more acute by population pressures and by the multitude of activities which such pressures engender.—PHILIP DRINKER, D.Sc., School of Public Health, Harvard University.

Fluid, Electrolyte and Nutritional Requirements in the Average Surgical Patient

A Statistical Analysis

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FOR A number of years we have been interested in the problem of complete parenteral nutrition in surgical patients. The purpose of this paper is to give a brief run-down on some of the observations which have been made in our laboratory.¹⁻³

Balance studies were done on approximately 100 patients who were fed parenterally for a total of 488 patient days. Statistical analyses were used in the construction of the graphs.

Fluid Requirements.—In Figure 1, the 45° line (the line of equivalence) defines equal values of intake and output. The scatter points each represent a combined intake-output value for the variable of reference on one day of observation. The heavy straight line (the least squares regression line) is the best fitting straight line to indicate the average relationship of output to intake. This line should agree essentially with the empirical regression line (the dotted line).

In this graph it is shown, at the point at which these two lines cross (the line of equivalence and the least squares regression line) that the average optimum fluid requirement was found to be 2.75 liters per day. The almost self-evident correctness of this figure seems to lend credence to the Figures which will be referred to in subsequent paragraphs.

Nitrogen Requirement.—Figure 2 represents the relationship of output to intake for nitrogen. Though the association between intake and output for nitrogen is of a much lower order (as indicated by the flatter least squares line and the more nearly circular scatter of dots) it was found that the average nitrogen output equals

the intake at a daily assimilation of approximately 18 grams.

Without putting it to statistical analysis, because of lack of sufficient data, we seem to see, in this graph, the possibility of constructing a sigmoid type of curve (the broad zippatone line) wherein the nitrogen output-intake relationship would essentially parallel our line of equivalence in the ranges of 12 to 24 grams of nitrogen intake. If this were the case, it would indicate, statistically, that the average nitrogen need could vary between 12 and 24 grams. This surely might be expected, for certainly individual patient differences could account for such variations in the nitrogen needs and nitrogen utilization.

Potassium Requirement.—In Figure 3 we see the output-intake relationship for potassium with the theoretical optimum at approximately 70 mEq. per day.

It is also evident in this graph that the body puts out approximately 50 mEq. of potassium per day regardless of the potassium intake. This is indicated in the lower left square where the proportion of dots (the output) above the line of equivalence is greatly in excess of the dots (the intake) below the equivalence line.

The possibility of a sigmoid curve paralleling the empirical regression line suggests reasonable agreement with our equivalence line between 50 and 100 mEq., indicating thereby that the optimum daily average intake-output relationship, or need, for potassium may vary between 50 and 100 mEq. per day.

Sodium Requirement.—In Figures 4 and 5, the sodium and chloride input-output relationship is balanced at 90 mEq. per day. This suggests the average daily optimum needs.

The empirical regression line is remarkably

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straight and remarkably approximated throughout by the least squares line. This finding, associated with the tremendous individual intake-output variation from day to day, suggests the possibility

again to use statistical analysis to evaluate the patient's balance status as he passes through time. To determine this the trend toward equilibrium was analyzed progressively from day to day.

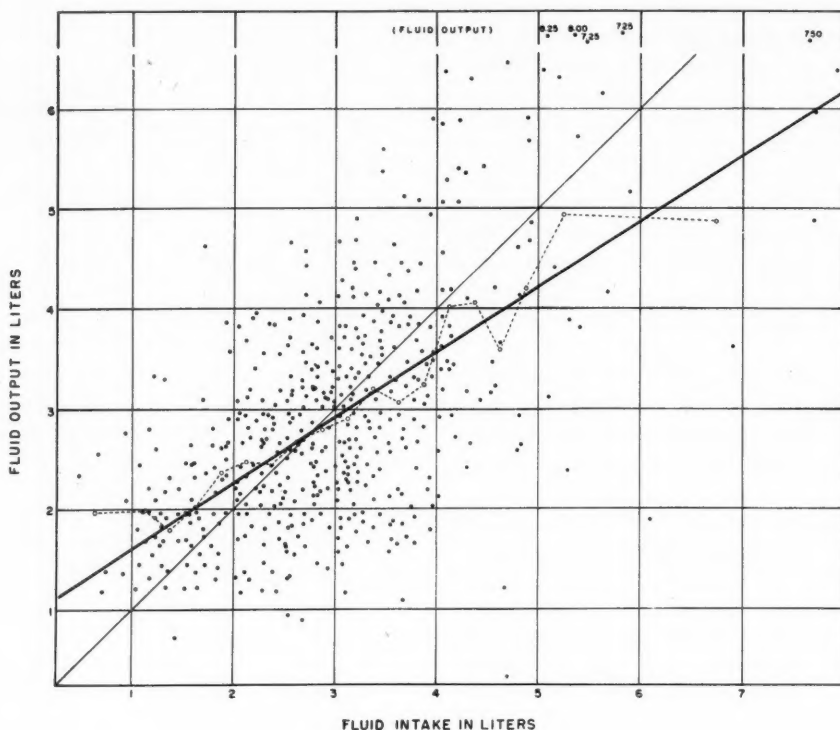


Fig. 1. Fluid Requirements.⁴

of internal shift of sodium and chloride to accommodate for the rapid physiologic demand associated with illness.

Chloride Requirement.—There was, however, slightly greater tendency to retain chloride than there was to retain sodium, as indicated by the increased number of dots below the least squares regression line (Fig. 5).

The Trend Toward Equilibrium.—The primary objective of any parenteral nutrition should be to keep the patient in constant nutritional and electrolyte balance. It is realized that the period of adjustment may be influenced by the patient's condition, his response to treatment and by our technical and clinical inability to determine immediately and accurately his needs.

Accepting these variables, but in an effort to eliminate preconceived ideas, we have endeavored

A circular scatter of individual determinations would suggest that there was no relationship of output to intake whereas an elliptic scatter paralleling the line of equivalence would indicate a high relationship and, consequently, equilibrium.

It seems unnecessary to illustrate graphically every daily determination as the patients pass through time, for to do so would entail an almost endless number of graphs. A typical example is illustrated in Figure 6, a circular scatter, showing no correlation between intake-output for nitrogen on the day of surgery. Figure 7 shows an elliptic scatter indicating a high relationship for nitrogen on the second postoperative day.

Using this method of statistical analysis it became evident that beginning on the first day of intravenous feeding, in the pre-operative period, there was a tendency for progressively greater

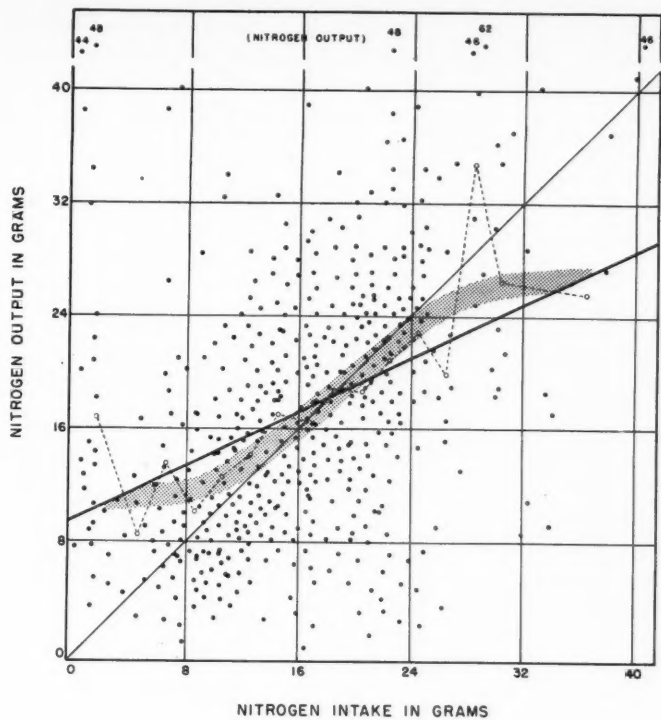


Fig. 2. Nitrogen Requirements.⁴

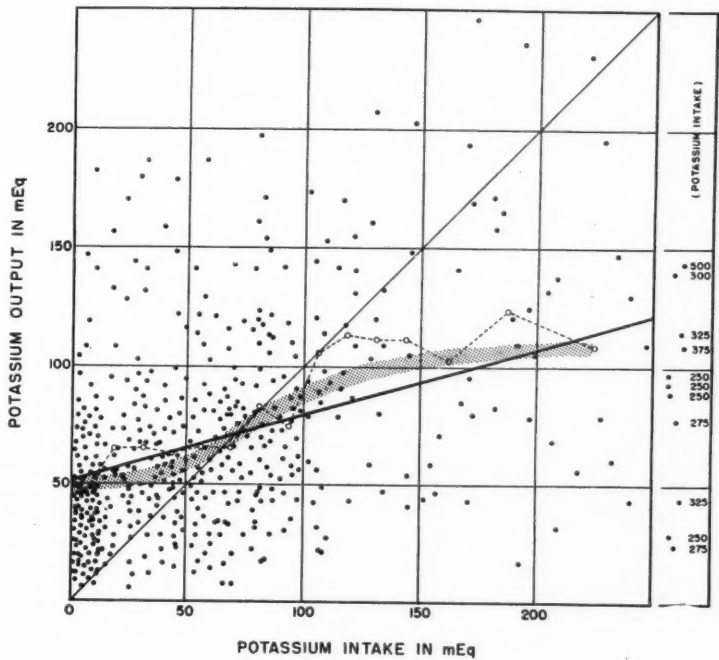


Fig. 3. Potassium Requirements.⁴

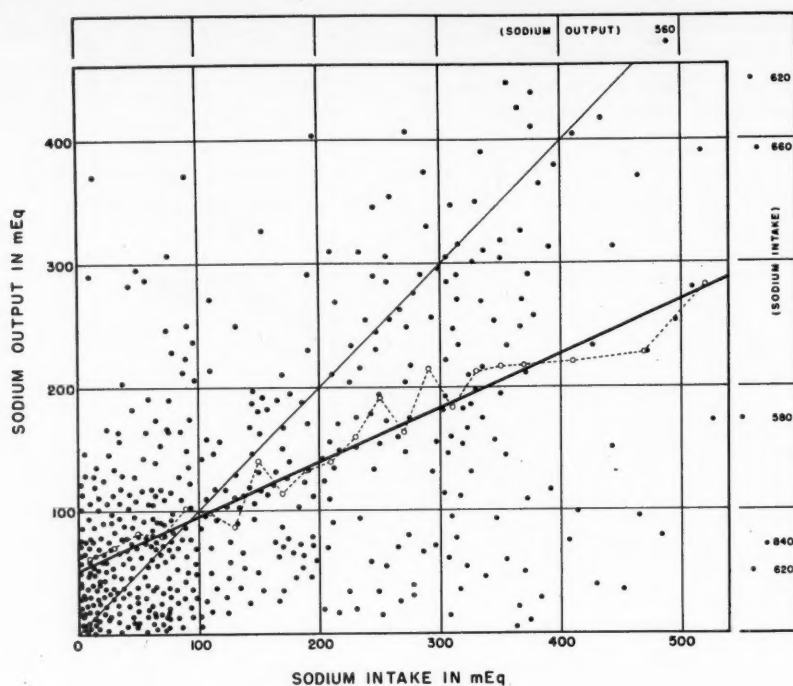


Fig. 4. Sodium Requirements.⁴

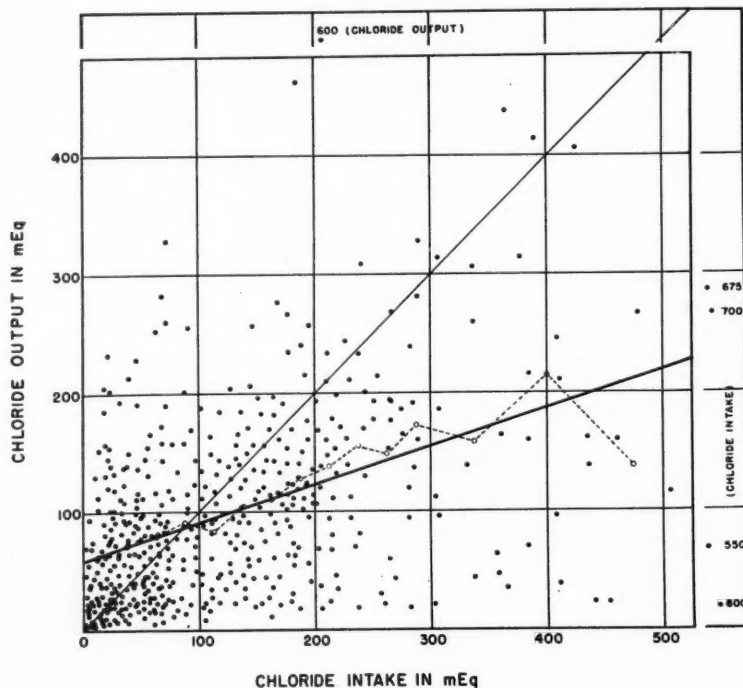


Fig. 5. Chloride Requirements.⁴

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equivalence for nitrogen as the patients passed through time. (Fig. 7) In other words, the patients were in better nitrogen balance after the third day of parenteral feeding than they were on the first day.

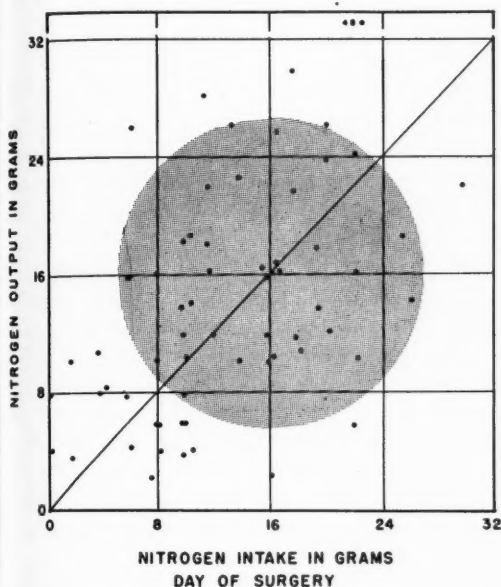


Fig. 6. This represents the scatter of nitrogen intake in relation to nitrogen output on the day of surgery. This is a circular scatter distribution and indicates that on this day there was little or no relationship between input and output. This is the day of "alarm" and, as might be expected, the nitrogen demands were unpredictable.⁵

On the day of surgery, equilibrium was again completely upset. (Fig. 6) On this day there was no relationship between intake-output. The extent of the nitrogen balance on this day seemed unpredictable. This, no doubt, represents the physiologic variables associated with the alarm of surgery.

Beginning again on the first postoperative day, nitrogen input-output relationship has a tendency to become progressively more stable as we pass through time.

Pertaining to potassium, it appeared that equivalence had a tendency to develop as the patient passed through time. On the day of surgery there was a tendency towards a negative potassium balance. Excessive potassium was being excreted. More potassium might have been used. This finding suggests that if the urine output is established, following operation, there need be no

fear of administering reasonable amounts of potassium on the day of surgery.

Following surgery, there was no significant increase in the potassium output as might have been anticipated.

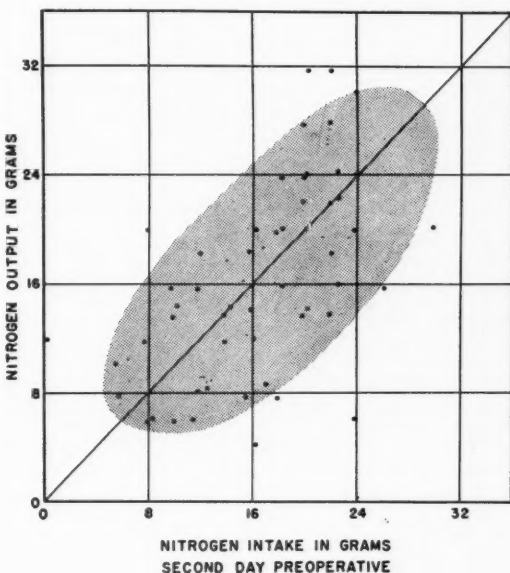


Fig. 7. This represents the nitrogen intake-output relationship on the second pre-operative day. This is an elliptic scatter and indicates a high relationship. It indicates that the patients were attaining nitrogen equilibrium.⁵

For sodium and chloride, one gains the impression (from the wide dispersion of input-output relationship) that sodium and chloride equilibrium is not greatly dependent upon the day-to-day intake. There was no significant trend toward greater sodium or chloride equivalence in passing through time. To that extent we are justified in relying upon the cybernetic influences within the body to make the physiologic adjustments if we will only provide the daily average requirement.

For chloride, as was previously indicated (Fig. 5), it again appears that the amount of chloride intake could have been slightly reduced without causing a chloride deficit, since it was observed that the proportion of patients who were in positive balance increased for each succeeding day as the observations passed through time.

The Ideal Electrolyte Solution.—On the basis of these data we have postulated three theoretical

ly ideal polyionic solutions for intravenous use, as indicated in the accompanying table.

Though these figures represent the average electrolyte needs during the three phases of surgery, a more practical approach suggests a single basic solution containing the minimum requirements

nephrosis, and autopsy reveals tubular degeneration of the kidneys.

Conclusions

Our studies indicate that the average daily parenteral nutritional requirements to be 2.75

THEORETICALLY IDEAL POLYIONIC SOLUTIONS FOR INTRAVENOUS USE

| Total Fluid Intake/24 Hours | N gm./l. | K mEq./l. | Na mEq./l. | Cl mEq./l. |
|-----------------------------|------------|-----------|------------|------------|
| Pre-operative | 2.5 liters | 5.6 | 16.7 | 42.0 |
| Day of surgery | 3 liters | 5.2 | 25.8* | 33.3 |
| Postoperative | 3 liters | 7.2 | 19.6 | 22.2 |
| | | | | 31.7 |
| | | | | 30.9 |
| | | | | 22.8 |

*It may be desirable to leave potassium out on the day of surgery until urine flow is established.

in any of the surgical phases (17 mEq./l. of potassium, 22 mEq./l. of sodium and 20 mEq./l. of chloride).

This then lies within the realm of safety. A basic polyionic solution such as this would provide the daily electrolyte requirements in 2.75 liters of fluid. If the patient is consuming, orally, part of his nutritional requirements, it can be assumed that he is also receiving the proportionate part of his electrolyte requirements and, therefore, a supplementary intravenous feeding with these basic electrolytes will still maintain his daily electrolyte needs.

Electrolyte needs which might become evident during the course of surgery or illness could be corrected by adding concentrates to the basic solution.

Elevated Blood Sugar With Electrolyte Imbalance.—If an electrolyte imbalance does develop, we have found an almost constantly associated elevation of the blood sugar. In a group of fifty-nine patients with definite electrolyte imbalance, the blood sugar was found to lie above 140 mg. per 100 cc. in thirty-seven instances. This finding has suggested the possibility of treating an electrolyte imbalance by the administration of a relatively large quantity of insulin in conjunction with a high concentration of sugar and a basic polyionic mixture of electrolytes. We have used this method of controlling a severe electrolyte imbalance and have obtained excellent results. It is our impression that the forced metabolism of carbohydrate by this method carries with it the metabolism of electrolytes and therein—correction.

An uncontrolled electrolyte imbalance terminates as a renal shutdown, a lower nephron

liters of fluid, 12 to 24 grams of nitrogen, 90 mEq. of sodium and chloride and 70 mEq. of potassium.

From these studies it appears that a polyionic electrolyte solution containing 17 mEq./liter of potassium, 22 mEq./liter of sodium and 20 mEq./liter of chloride should be employed as a basic solution for routine parenteral use. Specific electrolyte deficits can be corrected by adding ampules of electrolyte concentrates to the basic solution.

When a critical electrolyte imbalance develops, it is frequently associated with an elevation of the blood sugar.

Under these circumstances we have found that an electrolyte imbalance responds to treatment by the intravenous administration of high concentrates of sugar and large doses of insulin in a basic polyionic mixture of electrolytes.

When a patient dies with an electrolyte imbalance, postmortem examination indicates tubular degeneration of the kidneys.

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The Treatment of Hypospadias

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HYPOSPADIAS is a congenital arrest of fusion of the urethral folds behind the fossa navicularis. It is classified according to the location of the external urinary meatus, as juxtaglandular (Fig. 1a), penile (Fig. 1b), penoscrotal (Fig. 1c), scrotal (Fig. 1d), and perineal (Fig. 1e).

Its etiology is not clear, but appears to be due to some disturbance in hormonal relationships during early development; it can be produced in experimental animals by administering estrogens to the pregnant female, with only the male offspring being affected. In this connection, it has been suggested that younger women, because of their greater supplies of estrogens, are more likely to bear hypospadiac children. Sorenson investigated the ages of the mothers of 167 hypospadiacs and concluded that this was not so.

The only other congenital anomaly commonly associated with hypospadias is undescended testis, which is about ten times more common in association with it than without it. Hypospadias has some tendency to occur in families, in one instance having been reported in six successive generations, but such an occurrence is rare.

What appears to be perineal hypospadias with undescended testes in an infant constitutes a special problem, because such an individual may actually be a female pseudohermaphrodite with hyperplasia of the androgenic layer of the adrenal cortex and hypoplasia of the zones which produce the mineralocorticoids. It is imperative that these patients be recognized before operation is considered because any unusual stress may precipitate a fatal addisonian crisis (Wilkins). Their sexual chromatin is female, they have excessive 17-ketosteroids in the urine, and they respond to treatment with cortisone.

Hypospadias requires operation only if it interferes with aiming of the urinary stream or with

proper insertion of the penis into the vagina. This excludes the juxtaglandular variety which, however, is occasionally associated with stricture of the external urinary meatus requiring meatotomy. Since the conventional operation will displace the urinary opening backward, and will fail to redirect the stream, the condition is best treated by Browne's dorsal meatotomy (Fig. 2). There is usually a duct which extends backward from the fossa navicularis to end blindly just dorsal to the meatus. A single cut with one blade of a scissors inserted into this duct and the other into the meatus will widen it without displacing it backward (Fig. 3).

In the more extensive types of the anomaly, comprising half or more of the total number, the objectives of operation are to straighten the penis and to advance the external meatus. This ordinarily has to be done in stages because the former requires so much mobilization of the skin in the area of the future urethra as to make its construction impracticable until healing has resulted in a new blood supply.

Some difference of opinion exists as to the best age for operation. It is undoubtedly easier to perform after development is complete, because there is more tissue with which to work, but there is a growing feeling that it is better psychologically to finish treatment by the age of six, so that the hypospadiac will not be twitted by his schoolmates. I have recently had an interesting insight into this question from a conversation with a patient, now a psychiatrist, upon whom I had operated at the age of eighteen for penoscrotal hypospadias. He said that his brothers never teased him about his deformity, but that he had avoided athletics, in which he was much interested, because he was ashamed to expose himself in locker rooms. He had concluded that his childhood and adolescence would have been much more satisfactory if his anomaly had been corrected in the preschool period.

Successful straightening of the penis depends primarily, not upon the manner in which the skin is

Presented before the Montana State Medical Society, Missoula, September, 1957.
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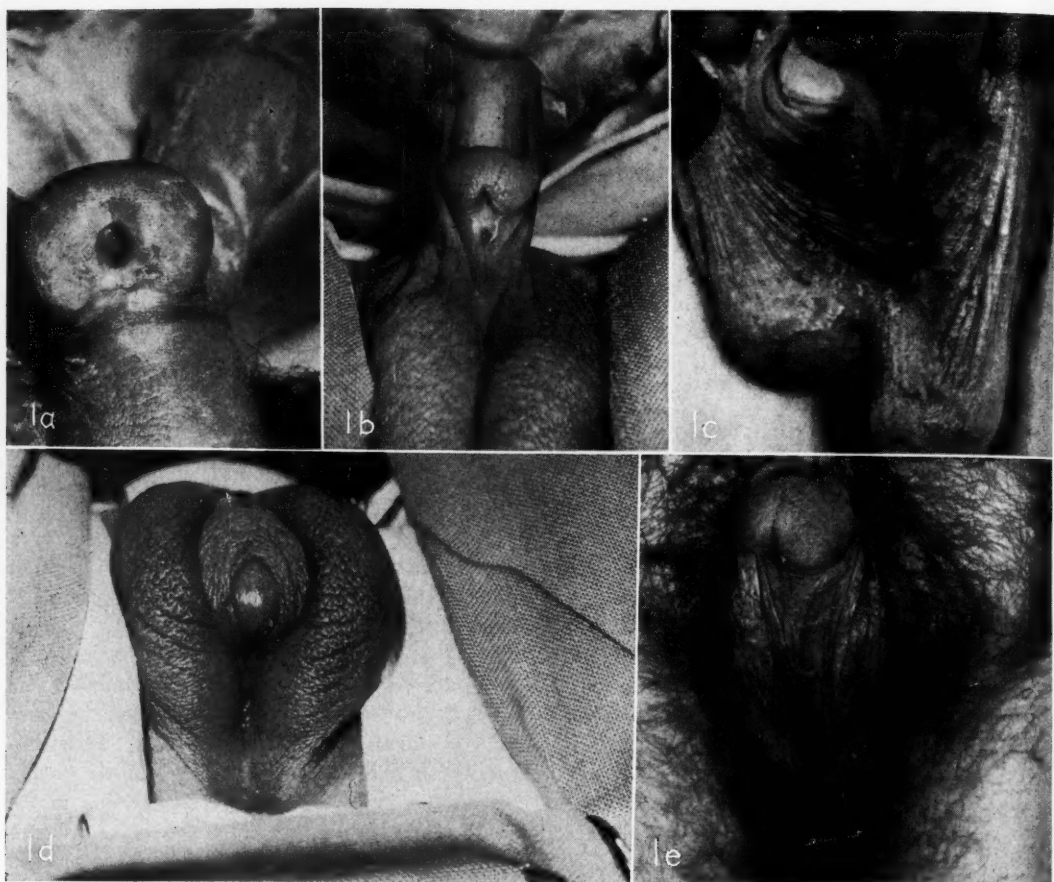


Fig. 1. Various types of hypospadias: (a) juxtaglandular, (b) penile, (c) penoscrotal, (d) scrotal, (e) perineal.

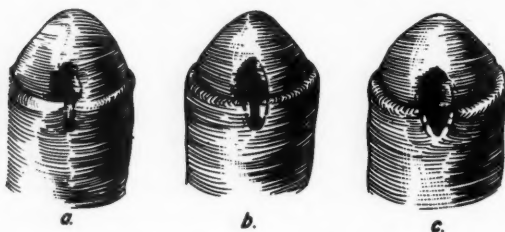


Fig. 2. Denis Browne's dorsal meatotomy.

moved about, but rather upon complete removal of the fibrous rudiment of the corpus spongiosum which, being shorter than the corpora cavernosa, serves as a bowstring and so produces the ventral curvature of the penis (congenital chordee) which is characteristic of hypospadias. Secondary shortening of Buck's fascia and attachment of the free end of the intact urethra may contribute to the curvature. Only two methods of straighten-

ing the penis need be considered. The first workable technique, and still a useful one, was that of Duplay (Fig. 4). The fibrous band is dissected out through a transverse incision on the ventrum just behind the glands. The ventral half of Buck's fascia is divided or excised if necessary, and the distal urethra is then freed if the penis is not perfectly straight. The redundant skin on the dorsum is mobilized so that longitudinal closure of the skin will draw the excess toward the ventrum. The urine is diverted for a few days with an inlying catheter. Because any operation upon the penis is likely to be followed by so much swelling of the skin as to pull suture lines apart, a snug wrapping of vaseline gauze covered with sterile roller bandage is applied. It is probably a good plan to give an estrogen in doses sufficient to prevent erection, starting a few days before operation, and continuing until healing is well advanced.

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Nesbit (Fig. 5), believing that a longitudinal scar upon the roof of the new urethra might interfere with healing of the urethroplasty, prefers to make a circular incision just behind the

to the ventrum where it is later used for construction of the urethra. The resulting transverse scar cannot reproduce the original curvature, nor does it impoverish the blood supply of a new



Fig. 3. Shows results using Browne's meatotomy.

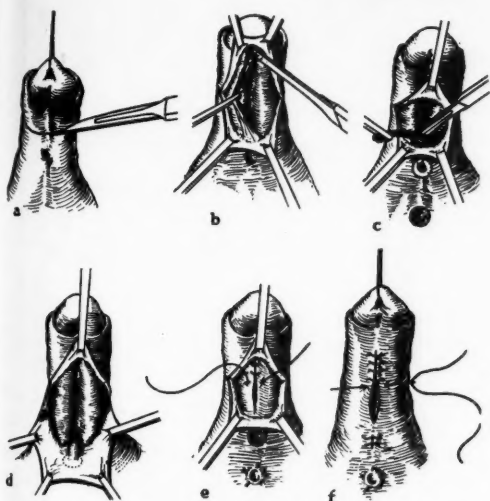


Fig. 4. Duplay technique for straightening of the penis.

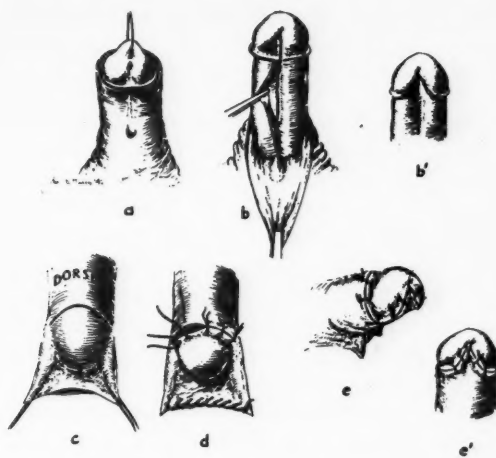


Fig. 5. Modification of Nesbit's correction of hypospadias.

corona and peel the whole foreskin back to the external meatus. He removes the rudimentary corpus spongiosum, then pulls the skin back down like a coatsleeve and incises it transversely upon the dorsum sufficiently to permit drawing the glans through it and suturing the two together. The defect thus left upon the ventrum is closed transversely. This transfers the excess dorsal skin

urethra later built from ventral skin. The choice between these two operations is, in my opinion, as much a matter of personal taste as of any superiority of one over the other. Far more important are thorough correction of any factors contributing to curvature, and painstaking hemostasis.

Whether the new external meatus should be at



Fig. 6. Shows results of Thiersch urethroplasty with meatus behind glans (after sixteen years).

the tip of the glans, as in the normal organ, or whether it suffices to place it at the corona, is a matter of disagreement. In my experience and in that of Culp, tunnelling the glans almost invariably leads to stricture requiring tedious treatment. I therefore prefer, at the first stage, to make a groove in the ventral aspect of the glans from the fossa navicularis through the corona as shown in connection with Nesbit's operation. When, at the next stage, the urethra is brought to the corona, the patient will be able to urinate straight forward, and will not be subject to so much risk of stricture of the meatus; the penis will look normal to any but the most expert scrutiny (Fig. 6).

Having straightened the penis, one must decide when to construct the urethra. I prefer to wait for at least a year so that contraction of the scar of the first operation will be complete; if curvature is destined to recur, it will have done so. It is much easier to correct before an urethra has been made. However, Belt undertakes urethroplasty in three months.

I shall content myself with discussing but three of the innumerable types of urethroplasty which have been described, since one of them will be applicable to any situation. Certain principles

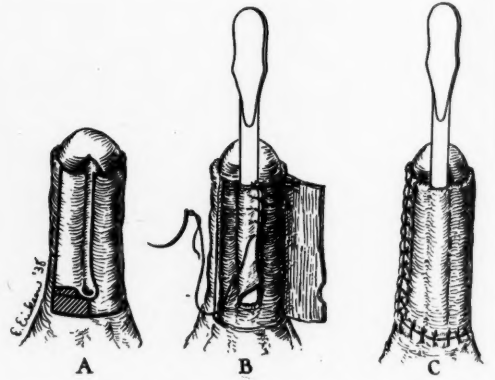


Fig. 7. The operation of Thiersch.

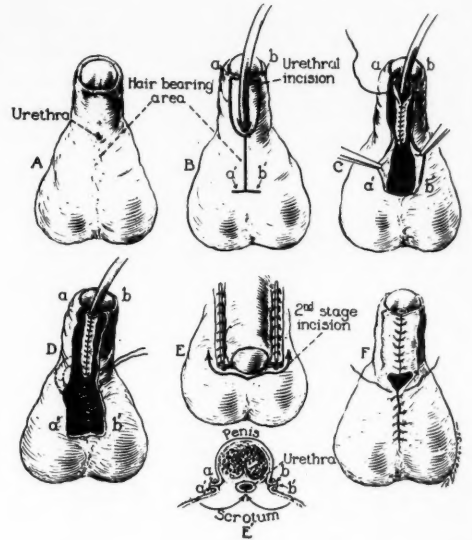


Fig. 8. Cecil's operation.

are essential to success with any urethroplasty. First, the penis must be straight. Second, skin flaps must be as thick as possible. Third, there must be absolutely no tension on suture lines, especially since postoperative swelling will increase it; and last, suture lines in the new urethra should not coincide with those in the outer skin.

The operation of Thiersch (Fig. 7) was the first to succeed. It is suitable only for fairly mature genitalia. It differs from that of Duplay in

that the suture lines in the new urethra do not coincide with those in the covering skin. It may be used for any degree of hypospadias, but is followed by fistulae, particularly at the junction of the old and new urethras, in too high a percentage. For that reason, it is best reserved for scrotal and perineal hypospadias in individuals with fully developed genitalia.

Cecil's operation is most nearly fistula-proof, but is not applicable to posterior scrotal nor per-

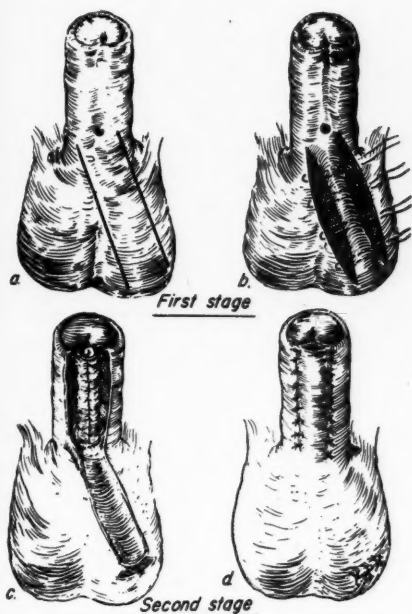


Fig. 10. Wehrbein's operation.

ineal defects (Fig. 8). The urethra is constructed in the manner of Thiersch or Duplay, and is then buried in a trough in the scrotum. The lack of postoperative swelling (Fig. 9) is probably as responsible as the re-enforcement of the urethra by the scrotum for the lack of postoperative fistulae. While the necessity for a third stage to separate the penis from the scrotum is a disadvantage, it is psychologically advantageous in that all concerned expect the third operation: it avoids the disappointment of an unanticipated third procedure for a fistula.

Wehrbein's operation stands midway between the two preceding ones in terms of frequency of fistulae (Fig. 10). It involves two stages, and is applicable with slight modification to somewhat



Fig. 9. Shows the lack of postoperative swelling using Cecil's operation.

more extensive defects than is the method of Cecil.

Troublesome complications may follow any of the operations for hypospadias. They include recurrent curvature of the penis, fistulae, strictures especially of the external urinary meatus, and urethral beards with secondary stone formation. The first three result from technical faults either in the design or in the execution of the operation. These include: inadequate removal of the fibrous rudiment of the corpus spongiosum, imperfect hemostasis with secondary hematoma, the use of flaps which are too thin, and suturing under tension. Postoperative swelling may produce tension where none was present at the time of closure. All are avoidable with sufficient care.

The fourth complication (Fig. 11) results from the use of hair-bearing skin for the urethra, and may occur after any of the operations described. In mature individuals this can be avoided by epilating surgically the skin to be used for the urethra, preferably at the time of straightening. This requires that pre-operative shaving of the

TREATMENT OF HYPOSPADIAS—CREEVY

area be omitted. Each hair in the area of the future urethra is elevated with a hemostat and its follicle cut off with fine scissors. In infants and children it is impossible to be sure just where

upon unsuccessfully by others. In addition sixteen have been straightened during the past year; while there have been no recurrences, it is too soon to say that they cannot occur.

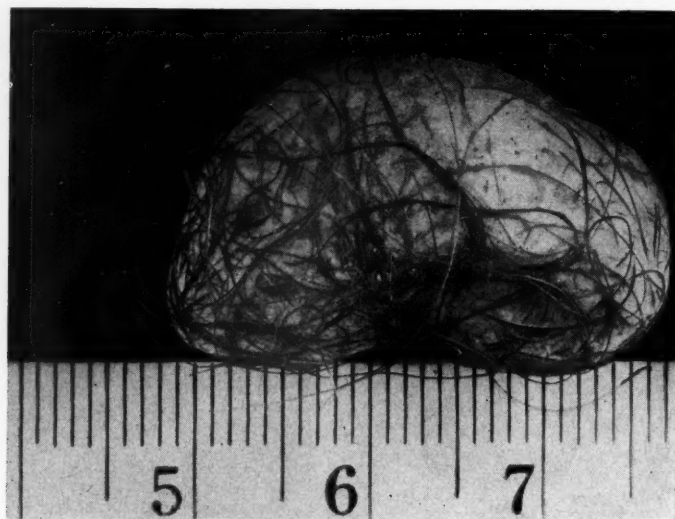


Fig. 11. Complication resulting from use of hair-bearing skin for the urethra.

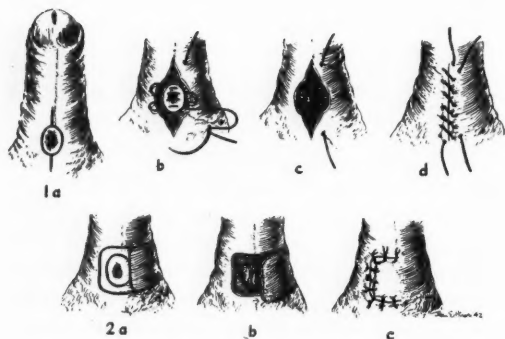


Fig. 12. Methods of closure of urethral fistula.

hair may appear. Therefore, the use of potentially hair-bearing skin can be avoided only by using a hairless free graft of skin (McIndoe) or of vesical mucosa (Marshall). Unfortunately, free grafts may fail to grow with the penis and so cause recurrent curvature. Luckily, the removal of urethral stones is simple, and many patients with urethral beards do not develop them.

In sixty-four of my patients, the penis was straightened more than a year ago (Duplay thirty-eight, Nesbit twenty-six) with one recurrence of curvature. Included are two previously operated

Sixty patients have been subjected to urethroplasty. Forty-three were done by the method of Thiersch: twenty-two healed by first intention, and three were left with fistulae which closed spontaneously, so that the urethroplasty was completed in one session in about 60 per cent. Fourteen of the remaining fistulae have been closed (Fig. 12), ten in one trial and four in two; one recurred after closure, and there has been no opportunity to close the other four. Cecil's operation has been done nine times; no fistulae resulted. One Wehrbein operation left a fistulae which, however, closed spontaneously. Four of six Denis Browne operations resulted in fistulae; the other two broke down almost entirely. While all have been repaired, I have abandoned the method as unsuitable to my talents or lack thereof.

Two strictures of the old external meatus have followed straightening of the penis, and one developed at the junction of the new and old urethras following urethroplasty. Five meatal strictures followed urethroplasty, but four of these resulted from bringing the new urethra through the glans.

(Continued on Page 573)

Saddle Embolus of the Aorta

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THE OCCURRENCE of a saddle embolus of the aorta is one of the most catastrophic events observed in medical practice and without surgical intervention carries an immediate mortality rate of at least 75 per cent.¹ It is high because gangrene of the legs or cardiac disease may cause death if the patient does not succumb from the embolus.

The chance for immediate survival is good if a satisfactory embolectomy is carried out within a few hours after the occlusion. Unfortunately, death from further embolic episodes and heart failure occurs frequently so that there is general pessimism regarding this vascular lesion.

In 1950, Albright and Leonard surveyed all reported cases of aortic embolus in the world's literature.² They recorded 193 patients; of these, 144 died, nineteen survived with loss of limb, and twenty-six were successfully treated by embolectomy. Since that report, the proportion of reported success is considerably higher, although the total of successful aortic embolectomies by 1957 was still only about fifty. A successful operation has arbitrarily been described as a complete restoration of circulation to both legs for a period of at least three weeks after operation with no loss of tissue as a result of the disturbed circulation.² One reason for more successful cases of aortic embolectomy of late is because of the increasing frequency of surgical procedures for acquired valvular heart disease. These cases occur in hospitalized patients and therefore it is possible to extirpate the clot earlier. A successfully treated case of saddle embolus of the aorta is reported here.

Case Report

The patient was a housewife, aged forty-two, with rheumatic heart disease. She had mitral and aortic valvular disease with mitral insufficiency and auricular fibrillation. She was being treated with digitalis.

On June 10, 1956, the patient had left ureteral colic

and hematuria which probably was caused by a renal arterial embolus.

On July 15, 1956, she developed a sudden right hemiparesis and aphasia which undoubtedly was due to a cerebral embolus.

She was hospitalized and four days later, on July 19, 1956, at 7:00 p.m. the patient experienced severe pain in both legs. Her entire body was cool and clammy, but the legs were cooler and there was mild cyanosis. Pulsations were absent bilaterally in the femoral, popliteal, posterior tibial, and dorsalis pedis arteries.

A diagnosis of saddle embolus of the aorta was made and the operation begun two and one-half hours after the occlusion. Spinal anesthesia with small amounts of general anesthesia was used and the abdomen opened through a midline incision centered at the umbilicus. The small bowel was placed outside of the abdominal cavity.

The posterior peritoneum was incised over the aorta and down over the sacrum to expose the common iliac arteries. The aorta up to 5 cm. above the bifurcation was pulseless and firm; the common iliac arteries were firm for about 3 cm. below the bifurcation and distal to this they were contracted in spasm. Umbilical tapes were placed around the common iliac arteries below the embolus and a Satinsky clamp on the aorta above the embolus. Care was taken not to injure the lumbar vessels. A longitudinal incision about 3 cm. long was made in the anterior aorta just above the bifurcation and directly over the embolus. The large clot was extracted and suction applied to the common iliac arteries to remove smaller thrombi. There was some back bleeding in the iliac arteries. The aortic incision was then closed with a continuous over-and-over suture of 5 "0" arterial silk on an atraumatic needle. No attempt was made to evert the edges. The umbilical tapes on the iliac arteries were released first and then the aortic clamp removed. Satisfactory pulsations were palpated in both external iliac arteries. The legs became warm and pink and pulsations returned to the lower extremity arteries.

The peritoneum was approximated over the aorta and the abdomen closed in the usual fashion.

During the operation the blood pressure dropped from 150/90 to 60/40, but then gradually returned to 115/60.

No organisms were cultured from this aortic embolus.

Intravenous heparin was started twenty-four hours postoperatively in a dosage of 50 mg. every four hours. Dicumarol was begun sixty hours postoperatively and heparin discontinued when a satisfactory prothrombin time was obtained.

Presented before the Minnesota Surgical Society, Duluth, Minnesota, July 19, 1957.

AUGUST, 1958

SADDLE EMBOLUS OF THE AORTA—STORSTEEN

TABLE I. SADDLE EMBOLUS OF AORTA IN DULUTH (1947-1957)

Summary of cases

| No. | Age | Sex | Etiol. | Prev. Emboli | Cardiac Rhythm | Onset | Hr. to Surgery | Treatment | Result |
|-----|-----|-----|--------|--------------|----------------|--------------------|----------------|--|--|
| 1. | 45 | F | R.H.D. | Yes | A.F. | Pain in legs | — | Amputation | Died, heart failure, and mesenteric emboli |
| 2.* | 42 | F | R.H.D. | Yes | A.F. | Numb, pain in legs | 2½ | Aortic embolectomy | Alive 18 months |
| 3. | 42 | F | R.H.D. | No | A.F. | Pain legs | — | Anticoagulants | Alive |
| 4. | 75 | F | A.S. | No | A.F. | Numb legs | 5 | Symp. block, iliac and femoral embolectomy | Died, acute coronary insufficiency |
| 5. | 74 | M | A.S. | No | A.F. | Pain in legs | — | Anticoagulants | Died, bilateral pulmonary emboli |
| 6. | 87 | F | A.S. | Yes | A.F. | Blue cold legs | — | — | Died, cerebral embolism |
| 7. | 63 | F | A.S. | No | A.F. | Pain in legs | — | Symp. block, amputation | Alive—1½ yr. |
| 8. | 71 | M | A.S. | No | A.F. | Blue cold legs | — | None | Died |

*Case report.
R.H.D.—Rheumatic heart disease.
A.S.—Arteriosclerotic heart disease.
A.F.—Auricular fibrillation.

TABLE II. ORDER OF FREQUENCY OF PERIPHERAL ARTERIAL EMBOLI

Warren, Linton and Scannell⁴ (337 Emboli)

| Site | Emboli | Per Cent |
|------------------|--------|----------|
| Femoral | 80 | 23.7 |
| Upper extremity | 59 | 17.5 |
| Internal carotid | 50 | 14.6 |
| Popliteal | 33 | 9.8 |
| Iliac | 30 | 9.0 |
| Aorta | 30 | 9.0 |
| Mesenteric | 17 | 5.0 |
| Tibial | 8 | 2.4 |
| Other | 30 | 9.0 |
| Total | 337 | 100.0 |

Other postoperative measures consisted of intranasal oxygen, elevating the head of the bed on 6-inch shock blocks, and a heat cradle with one 40 watt bulb. The cardiac condition was managed by Dr. Robert Goldish, an internist.

Several hematomas developed in both buttocks at the sites of penicillin injections, but otherwise the patient did well postoperatively.

Physiotherapy for the hemiparesis was started eleven days postoperatively. The patient improved rapidly except for weakness in the right arm. About one month after surgery she was dismissed from the hospital. Pulsations of the femoral, popliteal, posterior tibial, and dorsalis pedis arteries were all obtainable at the time of discharge. The patient is living and in fair health, now, eighteen months since the aortic embolectomy.

This patient's heart disease was primarily a mitral regurgitation so that heart surgery was not considered. Instead, she has been on Dicumarol and has had no further embolic episodes.

During the past ten years there have been eight cases of saddle embolus of the aorta in Duluth. Pertinent features are tabulated in Table I.

Three cases were on the basis of rheumatic heart disease and five had arteriosclerosis as the etiologic factor. Auricular fibrillation was present

in all patients and the initial symptom of leg pain was common. Five patients died, one survived after bilateral leg amputation, one recovered, but has claudication, and only one was successfully treated by embolectomy. It is difficult to be certain that the medically treated case was a true saddle embolus of the aorta. This patient (Case 3) did not enter our hospital until three weeks after occlusion. Circulation by this time was adequate to maintain life in both lower limbs so that only anticoagulants were used in management.

Incidence

Emboli to the aortic bifurcation constitute about 5 to 10 per cent of all peripheral arterial emboli.^{1,3,4}

The following table of Warren et al⁴ indicates the order of frequency of peripheral arterial emboli (Table II).

Pathogenesis and Etiology

Auricular fibrillation is the commonest cause of aortic embolism and the auricular appendage is the chief site of thrombus formation.

Rheumatic heart disease with mitral stenosis is most commonly the etiologic factor, but arteriosclerotic heart disease and hyperthyroidism may be the basis for the fibrillation. During a mitral commissurotomy operation an intra-auricular thrombus may break loose and lodge at the aortic bifurcation. Several of these cases have been reported so that peripheral pulsations are carefully watched following this operation.⁵⁻⁷

Myocardial infarction with associated thrombus formation on the wall of the ventricle is a relatively frequent cause of aortic embolism.

Unusual causes of an aortic embolus are para-

doxical emboli and large thrombi formed at the site of an arteriosclerotic plaque or aortic aneurysm.

Paradoxical emboli are those which arise from the peripheral venous system and reach the arterial side only if there is a defect in the partition between the right and left heart chambers.

Vegetations from the mitral valve in the course of subacute bacterial endocarditis are not large enough to occlude the aortic bifurcation.

Pathologic Physiology

Changes begin to take place in the artery at the site of the embolus soon after the lodgement of the clot.

Spasm of the adjacent arterial tree may be severe and may of itself cause gangrene of the leg. Leriche and Fontaine⁸ demonstrated that the spasm originates as a nervous reflex in the damaged arterial wall spreading via the sympathetics to produce spasm not only of the main channels, but of the collaterals as well. Sympathetic block or sympathectomy may relieve this spasm. However, I believe that sympathetic block plays a minor role in the management of aortic embolus. If the clot is removed, the reflex arc for spasm is broken. Stated another way, if the "plumbing job" is well done, sympathetic interruption is not necessary.

An embolus may first lodge at the aortic bifurcation and later migrate down one or both iliac arteries or a segment of the embolus may break off and move distally in the arterial tree.

The primary reason for early operation is the danger of secondary thrombus formation distal to the embolus. The speed with which a secondary thrombus forms is variable. A distal thrombus may form in a matter of several hours to an extent at which the smaller arterial radicals are completely obliterated. This of course, condemns to failure any attempted removal of the embolus. On the other hand, there may be practically no secondary thrombosis in as long as twenty-four to thirty hours after occlusion.

Gangrene of both lower extremities is common if a saddle embolus is not removed. Those cases treated conservatively and in which gangrene did not occur either had fragmentation and distal migration of the embolus, or, previous gradual thrombosis of the iliac artery stimulated collateral circulation, or, there may not have been a bi-

furcation embolus, but rather a severe vasospasm associated with unilateral iliac embolism.

Symptoms and Signs

From a teaching standpoint, it is convenient to think of the five P's of embolism, namely: pain, pallor, paresthesias, paralysis, and pulseless. However, this quintet is not always present in its entirety.

The acute picture is striking and unforgettable. At the onset, there is often formication in the perineum and paresthesias in the legs, and they soon become paralyzed. There is nearly always pain in the lower extremities.

The feet are waxy white and cadaveric, and quickly become cool. The upper legs and the body to or above the level of the umbilicus displays a mottled cyanosis from venous stasis. No pulse can be felt in either femoral, popliteal, posterior tibial or dorsalis pedis artery.

With these findings and a background of a cardiac lesion capable of producing a large detachable thrombus, the diagnosis is obvious.

Differential Diagnosis

Thrombosis of the aorta with its gradual onset accompanied by claudication, trophic changes, leg atrophy, and impotence can scarcely be confused. Some of the peripheral manifestations of a dissecting aneurysm of the aorta may suggest embolic occlusion, but the mode of onset, the changing symptoms as the dissection progresses, and the late disturbance of pulse in either leg should be the basis of differentiation. A ruptured aneurysm of the abdominal aorta may interfere with pulsations in the leg. However, the associated collapse is more than is seen with uncomplicated embolic occlusion.

Management

A saddle embolus of the aorta may be treated surgically or medically. There are four don'ts that apply to the management of any arterial embolus whether the treatment is operative or non-operative, and these apply to an aortic embolus. Don't heat, don't refrigerate, don't elevate, done delay.

It should be made clear that every case of aortic embolus is treated surgically unless a major contraindication exists. Shein⁹ in a recent article has listed the following contraindications to aortic embolectomy: a moribund patient, nonsalvable

limbs, occlusion of more than nine hours duration, and co-existence of cerebral or mesenteric emboli resulting in a pre-morbid condition.

Taylor in 1952 reviewed all successful aortic embolectomies and found only two that were done after six hours.¹ However, successes have been reported as long as twenty-four hours following occlusion, so I would not deny a patient the only opportunity of recovery if other factors were favorable.

Because the operation can, at best, result only in limb salvage without influencing the etiology, there are certain patients who are best managed by non-operative methods. These methods would include: paravertebral sympathetic block, anticoagulants, protective bandaging of limbs, reflex hyperemia, and vasodilator drugs.

However, the vast majority of patients who have to be treated conservatively will not survive.

The key to effective therapy is prompt and accurate diagnosis. Once the diagnosis is made, plans should be made to institute surgery as promptly as possible. The operative procedure aims at restoring the aortic pathway. The cardiac danger in the patient with mitral stenosis is another problem.

Surgical treatment consists of either direct aortic embolectomy or of indirect removal of the embolus through iliac or femoral arteriotomies. The latter method has certain disadvantages, namely, it is not always possible to remove all embolic material in this manner, and, the intima may be damaged by much probing. A retro-peritoneal approach to the iliac arteries and aorta may be used, but the method of choice is certainly direct aortotomy via a transperitoneal incision. This gives a much greater chance for success than distal exposure with attempt to extract the clot from a distance.

The surgical treatment may be conveniently divided into three periods of time: (1) treatment of the embolus, (2) immediate postoperative management and (3) long term management.

Treatment of the Embolus.—Following prompt and accurate diagnosis, the patient should be hospitalized and the pain controlled with adequate amounts of narcotic, cardiac compensation maintained (if possible), and early embolectomy performed, preferably within eight hours.

Spinal anesthesia is probably the most satisfactory anesthetic.

The management as described in the Case Report, I believe is entirely adequate. Pott's arterial clamps are probably superior to umbilical tapes in controlling the arteries below the embolus, but rubber catheters or umbilical tapes may be used, and Madden recommends digital compression of the aorta and iliac arteries.¹⁰

Immediate Postoperative Management.—Mild warmth and slight elevation of the head of the bed I believe are beneficial. Anticoagulants if used carefully are of real aid. They are of as great a value in preventing intra-auricular thrombus formation as they are in preventing thrombosis in the aorta and distal arteries. I would not abandon their use as some have done.¹⁰

If it appears that the embolus was removed satisfactorily I do not believe that intra-aortic heparin is necessary. However, if the opposite is true and there is danger of clot farther down the leg, perhaps intra-aortic heparin at the conclusion of the operation is of benefit. It may be necessary to explore the femoral arteries or consider retrograde flushing of the more distal arteries if pulsations do not return in the extremity.

Long-term Management.—With the patient fully recovered from the effect of the aortic embolus, one should undertake studies from the viewpoint of correcting the cardiac lesion which was responsible for the embolus. In those cases with mitral stenosis, perhaps mitral commissurotomy should be carefully considered. Auricular appendectomy is not done as frequently now as several years ago. In this way, not only is cardiac function improved, but the risk of further embolic episode is lessened.

Long term anticoagulant therapy is an alternate method of treatment which is entirely satisfactory for rheumatic heart disease patients as well as those patients whose embolus arose from a mural thrombus secondary to myocardial infarction.

Prognosis

The factors influencing prognosis are: general condition of the patient and age, associated heart disease, associated atherosclerosis, time interval until surgery, distal thrombosis, and incomplete evacuation of clot.

SADDLE EMBOLUS OF THE AORTA—STORSTEEN

Summary

1. A successfully treated case of aortic embolus has been reported.
2. The embolus was removed surgically and there was complete restoration of arterial pulsations and function of the lower extremities. The patient is alive and well, now, eighteen months later.
3. There have been eight cases of saddle embolus of the aorta in Duluth hospitals during the past ten years.
4. Five patients died, one was treated medically and survived, but had claudication, another patient survived but had bilateral leg amputation. Only one was treated successfully by embolectomy.
5. A method of management of aortic embolus was described.
6. Factors influencing prognosis were listed.

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THE TREATMENT OF HYSPADIAS

(Continued from Page 568)

Summary and Conclusions

Hypospadias presents a fascinating surgical problem, the solution of which demands a variety of techniques. Experience with 140 operations in eighty patients has been summarized briefly.

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The Food and Drug Administration and Drug Safety

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IN choosing this topic for discussion, I have attempted to follow the views of Dr. R. B. Goldschmidt expressed in a presidential address at the Ninth International Congress of Genetics, held in Florence in 1954. He said:

"This means a topic which is not so special as to interest only a small group, but which nevertheless is on a sufficiently technical level; one which is general but not so general as to become commonplace; one which is to a certain extent controversial, at least sufficiently so to make an interesting discussion, yet at the same time is not so controversial as to be unsuitable for a discussion without the use of the gentle art of making enemies; one which is based upon the performance of the past without being of yesterday and retrospective, but also one which dares to look into the future and to risk a jump beyond the present without soaring into a flight of pure imagination."

In the golden age of medical discovery in which we live, complex technological problems of the highest order have developed. For this and other reasons, the Congress of the United States enacted food and drug legislation, the original "Pure Food and Drug Law" of 1906, which was completely rewritten and modernized in 1938. It is the 1938 statute known as the Federal Food, Drug, and Cosmetic Act and its regulations which establish the legal standards of performance and conduct for drugs sold and shipped in interstate commerce and for the manufacturing drug industry in general. It is this law which is administered by the United States Food and Drug Administration.

Long before the physician orders a drug, a team of physicians, chemists, bacteriologists, and pharmacologists have examined the claims of the manufacturer of the drug, studied the reports of investigations, often performed tests themselves, and established and will enforce the standards to

which the manufacturer must conform to assure the safety of the drug. The scope of this work extends from new to old drugs, from ethical drugs to quack products, from anthelmintics to antibiotics, from labels to literature, and from records to research. The team is the Food and Drug Administration.

Modern scientific methods are required by the team to carry out the purpose of Congress to insure that foods, drugs, therapeutic devices, and cosmetics are pure, wholesome, safe to use, made under sanitary conditions, and truthfully labeled. The Administration maintains laboratories in Washington known collectively as the Bureau of Biological and Physical Sciences which is composed of seven divisions each with special fields of interest.

In discussing the safety of drugs, it will bring the problem into proper focus if we realize at the start that no drug is safe in the absolute sense. It is only that diseases are not safe either and, in most cases, the drug is the lesser of the two evils.

The statement that no drug is safe is not an exaggeration for effect. Consider such everyday remedies as aspirin and mineral oil. The chances for injury are slight when 10 grains of aspirin are taken for a simple headache. The danger with aspirin is when its use masks a more serious disease, or is taken by the rare individual with an idiosyncrasy, or an infant has ingested an overdose from a carelessly misplaced bottle of aspirin. The solubilizing effect of mineral oil on the oil-soluble vitamins and subsequent loss via the intestinal tract is too well known to warrant further comment.

If the premise is accepted that no drug is intrinsically safe, the problem resolves itself into deciding the conditions under which the drug may be used safely. When they are considered from this standpoint, drugs are found to fall into three categories:

1. Those drugs whose chances of adverse effect may be sufficiently remote that the decision of whether or not to use them can be left up to the

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patient aided by the advice that can be given him on the label. These are the self-medication or over-the-counter drugs.

2. Those drugs whose sale is limited to prescription by a physician or dentist. This is not a conspiracy, as many seem to think, to enable the pharmacist to charge more and give the physician an additional fee for a prescription renewal, but rather that there are enough possibilities for harm in the drug that its use cannot be entrusted to the layman.

3. Finally, those drugs whose nature is such that even the physician is believed to need a certain amount of supervision in their use. These comprise the so-called narcotics: opium, cocaine, marihuana, and some of the newer synthetic drugs which possess addicting liability.

How are drugs assigned to these three groups? Prior to 1938 the decision rested with the manufacturer. When over 100 patients died as a result of a poor decision in the use of diethylene glycol as a solvent for sulfanilamide, the Congress enacted the new Federal Food, Drug, and Cosmetic Act, which included "New Drug Provisions." The term "new drug" was, by this law, given a legal definition. A new drug is defined as one that is not generally recognized among experts, qualified by scientific training and experience to evaluate the safety of drugs, as safe for use under the conditions prescribed, recommended, or suggested in the labeling. According to this definition it is the lack of recognition of safety by experts that constitutes newness. Very important also is the concept that safety is considered from the standpoint of the proposed labeling or recommendations for use. Without labeling, an opinion on new drug status is essentially meaningless.

Newness of a drug may arise by reason of:

1. The newness for drug use of any substance which composes the drug, in whole or in part, whether it be an active substance or a menstruum, excipient, carrier, coating or other component.
2. The newness for drug use of a combination of two or more substances, none of which is a new drug.
3. The newness for drug use of the proportion of a substance in a combination, even though a combination containing the substance in other proportion is not a new drug.
4. The newness of use of a drug in diagnosing, curing, mitigating, treating, or preventing a dis-

ease, or to affect a structure or function of the body, even though the drug is not a new drug when used in another disease or to affect another structure or function of the body.

5. The newness of a dosage, or method or duration of administration or application, or other condition of use prescribed, recommended, or suggested in the labeling of a drug, even though the drug, when used in other dosage, or other method or duration of administration or application, or different condition, is not a new drug.

The new-drug section of the law requires pre-testing of preparations prior to marketing. The manufacturer is required to submit for review the following information:

1. Full reports of investigations which have been made to show whether or not the drug is safe for use.
2. A full list of the articles used as components of the drug.
3. A full statement of the composition of the drug.
4. A full description of the methods used in, and facilities and controls for the manufacture, processing, and packing of the drug.
5. Samples of the drug and of the articles used as components thereof as the secretary may require.
6. Specimens of the labeling proposed to be used for the drug.

These data, when assembled and submitted, constitute a new-drug application. Responsibility falls on the Food and Drug Administration to evaluate all applications and determine whether they are complete, whether adequate study has been conducted to evaluate the safety of the preparation, and whether the article can be safely used. If all of the criteria are met satisfactorily, the application is made effective and the manufacturer is at liberty to introduce the drug into interstate commerce. If the application is incomplete or otherwise deficient, the manufacturer is advised and he can undertake steps to correct the situation and again submit the data for review.

The starting point for determining the safety of a new drug is aptly phrased by the late Dr. A. L. Tatum, formerly Professor of Pharmacology of the University of Wisconsin. He said:

"People are rather unpredictable and don't always die when they are supposed to, and don't always recover when they should. All in all, we must depend heavily on laboratory experimentation for sound and controllable basic principles."

The experimental approach for developing the data may vary somewhat depending on the objectives, but considering this from the aspect of the clinician only, the more important experimental phases that should be undertaken include acute and chronic toxicity, pharmacodynamics, and pathology. Clinical evaluation is next in order and should follow, not precede, the laboratory tests. Some of the criteria that enter into the final evaluation as to which of the three categories a drug may be assigned, include the seriousness of the disease to be treated, character of the toxic effects, and availability and safety of other drugs for the same disease.

What happens when a drug becomes old, obsolete, or dangerous? Drugs are engaged in a constant struggle for survival not very different from one taking place in the world of nature. In rare instances nothing seems to happen, and the drug may be said to grow old gracefully. Such is the case with ether, which was introduced more than one hundred years ago and yet continues today as the most widely used general anesthetic agent. Clearly, age is no handicap to those products that are fortunate enough to fill a real need.

In contrast to this are drugs that become obsolete and sink quietly into well-deserved oblivion. Asafoetida can be cited as an example. It has been the policy of the Food and Drug Administration to allow this process of evolution in drugs to follow its natural course, as long as the claims made for a drug are not inconsistent with scientific knowledge.

Sometimes there is even danger that a drug will become obsolete prematurely. Some twenty-five years ago, the use of watery extracts of ergot in obstetrics was held up as an example of the blind continuation of a thoroughly irrational practice. All the pharmacologists knew, or at least thought they knew, was that the active alkaloids in ergot were insoluble in water. It was the dogged persistence of the obstetricians that led to a re-examination of the problem and the discovery that ergonovine, the alkaloid, had sufficient water solu-

bility to account for the activity of the extracts. As the advantages of pure preparations of this new alkaloid became apparent, the water extract fell once more into disuse because of poor stability.

Drugs can become dangerous in a variety of ways. Occasionally the incidence of adverse reaction is so low that many years pass before the causal relation is established. Actually the drug was dangerous all along, and it is only the awareness that is new. Aminopyrine enjoyed tremendous popularity before it was discovered to be the cause of occasional cases of agranulocytosis. Now its sale is restricted to prescription so that the physician can weigh this risk against the needs of the patient.

Misuse of drugs by the public is also an important factor. At one time inhalers containing amphetamine (benzedrine) were available for over-the-counter sale. The inhaler served as a source for the drug and resulted in its misuse as a central nervous system stimulant. This misuse was corrected by substituting propylhexedrine for amphetamine in the inhaler, which has decidedly less effect on the central nervous system.

The discovery of better and safer drugs rendering earlier treatment obsolete is a third factor. The development of antibiotics for the treatment of syphilis relegated such heavy metals as mercury and bismuth to a minor role.

When a dangerous drug appears on the market today, it is usually a consequence of breakdown in control procedures. An offending drug may be nonsterile, pyrogenic, of incorrect strength, or even mislabeled. As soon as the error is discovered, the producer is usually eager to recall the material from the market. If not, the Food and Drug Administration has the product seized, and by adequate publicity warns the physicians, and, if necessary, the public in the area where the dangerous drug has been distributed. If physicians will report their significant adverse reactions to FDA, it will be of great assistance to us in discovering these dangerous batches and seeing that they are removed from the market before further injuries can occur.

The First Ten Years of the World Health Organization

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IMEDIATELY after the 105th Annual Meeting of the Minnesota State Medical Association, the Eleventh World Health Assembly (the annual meeting of the governing body of the United Nations World Health Organization) was held in Minneapolis from May 26 to June 14, 1958. This honor as host for the World Health Assembly, held for the first time in the United States, was given to Minnesota as a recognition of the outstanding pioneer work performed by our medical and public health institutions in Minneapolis and Rochester. The Minnesota State Medical Association had a special session on world health problems at the annual meeting.

Tenth Anniversary Session

The Eleventh World Health Assembly was preceded by a special two-day commemorative session marking the tenth anniversary of the World Health Organization and this was held from May 26 to May 28, 1958, in the Minneapolis Municipal Auditorium. Dr. Sabih Hassan Al-Wahbi, former Minister of Health of Iraq and President of the 1957 World Health Assembly, presided over this solemn meeting. Several hundred delegates and observers from all over the world were present.

Governor Orville L. Freeman of Minnesota and Mayor P. Kenneth Peterson of Minneapolis addressed the members of the assembly and wished them welcome in the heart of America. Francis O. Wilcox, Assistant Secretary of State for international organization affairs, welcomed the assembly on behalf of the United States Government. Philippe de Seynes, UN Undersecretary for economic and social affairs, spoke on behalf of the United Nations and the specialized agencies.

The highlight of the tenth anniversary session was the greeting by the President of the United States which was presented to the assembly by his brother and personal representative, Dr. Milton S. Eisenhower, President of Johns Hopkins University. It read in part:

"The tenth anniversary commemorative session of the World Health Organization directs our attention to the fact that the nations of the world are working together in harmony for the improvement of the living conditions of all peoples.

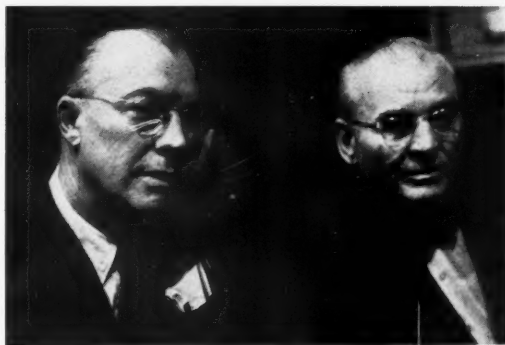
"As a result of the work of the WHO and the stimulating leadership it has given to its member states, millions the world over are spared from disease and suffering that would have been their lot.

"The United States is proud of its part and the part of its health leaders in this mutual endeavor. We look

forward to even greater accomplishments in the control of disease, in the building of health services and in the opening of new avenues of medical knowledge through research.

"We look to the WHO with confidence as a proven instrument through which the nations and the peoples of the world can combine their efforts, in friendship, toward the building of true peace."

WHO, Dr. Eisenhower said, faces two main tasks: eradication of those diseases that science now knows how to control; and discovery of



After delivering his speech, Dr. Eisenhower joined members of the U.S. delegation listening to Ministers and Secretaries of Health from other countries reporting on health progress in their own countries. For some of the speeches, he made use of the simultaneous interpretation system, listening on his earphones to the English interpretation. At right of picture is Senator Edward J. Thye, Honorary U.S. delegate to the Tenth Anniversary Commemorative Session.

measures for the ultimate conquest of other diseases for which no control is known yet. WHO has rendered valuable service in helping nations control and eradicate diseases such as malaria, yaws and trachoma, he said, adding:

"As the infectious diseases—the historic scourges on mankind—are gradually brought under control and eradication, we find other problems moving into the foreground of our concern. Two such are heart disease and cancer.

"We know that intensive exploration will solve the mysteries of heart disease and cancer—that a way will be found. It is even now a question of when, not whether. Where is almost immaterial. For the man or woman who achieves this final breakthrough may come forward in any part of the world."

A year-long study by the world's medical leaders on how research can best be used to fight cancer

and heart disease was then proposed by Dr. Eisenhower. He stated that the United States would contribute \$300,000 to such a study. "From this study," he said, "we would anticipate the emergence of a plan that would merit the support of member states. Furthermore, the United States is prepared to consider providing substantial support for any sound program that may result from the study."



After being unanimously elected President of the Eleventh World Health Assembly, Dr. Leroy E. Burney, Surgeon-General of the Public Health Service of the United States, takes his place on the tribune. Here he is being congratulated by WHO Director-General M. G. Candau (left) and Dr. Sahib Hassan Al-Wahbi, President of the Tenth Anniversary Session (right).

The ministers and directors of public health and other leading officials of the eighty-eight member countries were present. Dr. Brock Chisholm, the first former Director-General of WHO, Dr. Al-Wahbi, President of the commemorative session, and Dr. M. G. Candau, Director-General of WHO, summed up the objectives, activities and accomplishments of WHO in the first ten years of existence. Thereafter, a great number of official delegates of member governments reviewed the progress made in the field of public health in the respective countries over the past decade.

Among other prominent personalities present were Mr. Marion Folsom, U. S. Secretary of Health, Education and Welfare, and Dr. Charles Mayo who were official delegates of the United States, with Mr. F. O. Wilcox, for commemorative session. Among alternate delegates may be mentioned State Senator Edward J. Thyne, State Senator Hubert H. Humphrey, and Congressman Walter H. Judd, M.D., who were instrumental in bringing the World Health Assembly to Minneapolis.

Dr. LeRoy E. Burney, Surgeon-General of USPHS, chief U. S. delegate, was elected as President of the Eleventh World Health Assembly. His predecessors, Dr. Thomas Parran and Dr. Leonard A. Scheele, were also present. Among other alternate delegates were seen Dr. David Allman,

President of the American Medical Association, Dr. Martha Eliot, former chief of U. S. Childrens Bureau and former assistant Director-General of WHO, now professor of Child Health at Harvard University, Dr. H. Van Zile Hyde, Chief, Division of International Health, USPHS, and Dr. Frank H. Krusen, Professor of Physical Medicine and Rehabilitation, Mayo Clinic and Dr. Jonas E. Salk, Professor of Experimental Medicine, University of Pittsburgh.

Among advisers of U. S. delegation were Dr. Gaylord Anderson, Director of School of Public Health, University of Minnesota, Dr. R. N. Barr, Secretary and Executive Officer of Minnesota Department of Health, who was chairman of the Committee on Local Arrangements, and Dr. Harold S. Diehl, Dean, School of Medical Sciences, University of Minnesota.

A summary of the WHO activities during the past ten years is presented in the following as described in documents and above-mentioned speeches.

How WHO Came to Being

At its founding meeting in San Francisco in 1945, the United Nations issued an implicit mandate for the creation of a health organization to be included among its specialized agencies. In 1946, an International Health Conference attended by representatives of sixty-four nations, was held in New York city to lay the ground work for the establishment of the proposed UN agency. A WHO Constitution was drafted on this occasion, to become effective when twenty-six nations would ratify it. In the meantime, an Interim Commission was set up to carry on international health activities pending the emergence of a permanent World Health Organization. The program and some of the personnel of previous international organizations, the League of Nations Health Organization and International Office of Public Health, were transferred to Headquarters of WHO Interim Commission in Geneva. The twenty-sixth country ratified the Constitution on April 7, 1948—since recognized globally as World Health Day—and the WHO was officially launched as an integral part of the United Nations.

The first World Health Assembly was held in Geneva in July, 1948. Dr. Brock Chisholm, war-time chief of psychiatry in the Canadian Army and a renowned humanist, was elected Director-General of WHO. He held this post until 1953 when he was succeeded by Dr. M. G. Candau of Brazil, then assistant director of the PASB and formerly of the Brazilian Government's Co-operative Health Services.

Development of WHO Programs

The development of WHO and its programs during the first ten years have been phenomenal. The Organization can look back with pride on the accomplishments of the last ten years which

have brought about a virtual revolution in man's approach to health. While WHO does not conduct health programs of its own, it has acted as a helping technical expert, adviser, co-ordinator and catalytic agent to assist national governments in setting up various health services lacking, to some extent, in most parts of the world. The increase in WHO's membership from 26 states in early 1948 to 88 present, and the rise of its budget, contributed by the Organization's Member States, from less than \$5 million ten years ago to \$13,500,000 this year, are proof of recognition of the need for health planning and activities on an international scale.

In 1948, direct assistance to national governments in the form of international staff and field projects was a new and almost revolutionary idea. Today the World Health Organization has over 500 professors, doctors, nurses and other health personnel in the field, and in one way or another is assisting 700 health projects in 120 countries and territories.

Communicable Diseases in Retreat

During the last ten years, intensified national and international efforts have forced communicable diseases into retreat over a wide front. In countries with well-developed health services, diseases such as diphtheria and whooping cough and, in some cases, even tuberculosis, have ceased to be important public health problems. Great scourges of tropical and sub-tropical areas such as malaria, and treponemal diseases including yaws, have been attacked vigorously with the aid of WHO and other international aid programmes.

These are, however, only partial successes. Parallel with the retreat of the more commonly known communicable diseases in countries with highly developed health administrations, other diseases, such as poliomyelitis, cancer, cardiovascular diseases and mental health afflictions, have become more serious. No sooner do certain diseases appear to be succumbing to control methods when, unexpectedly, they acquire a new lease on life through the adaptive ability of either the micro-organism which causes the disease or the vector which carries it.

Malaria is a good example of the latter type of set back. Ten years ago malaria was, in tropical and subtropical countries, public enemy number one. It was estimated to cause three million deaths every year, out of 300 million cases. Today, the number of deaths has been reduced to about 1.5 millions and the number of cases to about 150 millions. This great improvement has been due to mass campaigns, in many cases encouraged and assisted by WHO and UNICEF (United Nations Children's Fund) in which residual insecticides such as DDT and dieldrin were used to cut the cycle of infection man-mosquito-man. However, from 1951 onwards, malaria-carrying mosquitoes in a number of countries began to show

signs of resistance to insecticides. This meant that malaria control had to give way to malaria eradication, i.e., malaria had to be wiped out before developing resistance made the existing insecticides totally ineffective.



About 50 million people are thought to be infected with yaws. However, a single shot of penicillin will cure it, and by 1958 national teams assisted by WHO and UNICEF had treated 20 million cases. The child is shown before and after treatment. (Photo by Eric Schwab)

In 1955, the World Health Organization called upon member states to join a world-wide malaria eradication campaign. At present, malaria eradication has nearly been achieved in nine countries or territories, is under way in fifty-one others and has been initiated or planned in sixteen more, with an aggregate population of 1,156 millions, representing 73 per cent, of the total population of countries where malaria is, or has recently been, a problem.

In the fight against treponematoses, especially yaws, penicillin treatment has so far proved effective. Yaws, a non-venereal disease resembling syphilis that is widespread in tropical areas, is increasingly coming under control. Mass campaigns have been launched with international assistance in more than twenty countries and territories. By the end of 1958, it is estimated that half of the 200 million people living in areas where yaws is prevalent will have been examined, and 25 million will have received injections of long-lasting penicillin, at a cost of between \$0.10 and \$0.15 per person. Among those examined, the 15 million with the disease in an active form will have been reduced to about half a million. With the prospect that yaws may ultimately be eradicated from rural areas of many countries, the emphasis of WHO programmes will shift to the attack on venereal syphilis in the urban areas of those countries where it is still found.

In the case of tuberculosis, prophylaxis has played an important part during the ten-year period. The WHO/UNICEF BCG vaccination campaign has reached over 200 million young persons tested and nearly 90 million vaccinated in fifty-

eight countries. However, due to the discovery of new anti-tuberculosis drugs, emphasis has now shifted onto "ambulatory" chemotherapy (and chemoprophylaxis) which allows sufferers to remain in their own homes while undergoing treatment. These methods are now being tried out in several pilot projects.



Infectious eye diseases such as trachoma and conjunctivitis cause much suffering and can result in partial or total loss of vision. Tetracycline saves the eyesight of thousands like this child, photographed before and after receiving treatment. (Photo by Homer Page).

Another disease against which mass campaigns have been assisted by WHO is trachoma, an eye disease leading to blindness, affecting an estimated 400 million in tropical and sub-tropical areas.

Environmental Health

Apart from its manifold activities dealing with specific diseases, WHO has given special attention to the problem of controlling the environmental conditions which favour ill-health. Under the generic name "Environmental Sanitation," a Division has been established to deal with such problems as safe water supply, sewage disposal, rural hygiene, housing standards, air and water pollution, and allied subjects. The importance of this work is indicated by the fact that, by 1957, WHO staff assigned to demonstration projects, at one time or another, included ninety sanitarians and sanitary engineers.

In the field of nutrition, kwashiorkor and other conditions associated with an insufficient intake of proteins are now one of the main concerns of the Organization. Much progress has been made in dealing with protein deficiency, especially in the diet of young children, after weaning, by developing processed, protein-rich foods from local materials, particularly in countries where milk and milk-products are not generally available.

Essential to the health of the community is maternal and child care. A marked expansion and improvement of maternal and child health services, largely as a result of the establishment of paediatric schools, and special refresher courses and in-

school training programmes, have taken place in the 54 countries and territories which, by 1957, had received assistance of this kind from WHO and UNICEF. According to the United Nations Demographic Yearbook, life expectancy has increased almost everywhere in the world. In some of the countries undergoing rapid development, life expectancy at birth has increased up to eleven years for girls and ten years for boys during the past ten years.

Regional Organization

To enable it to adapt its programmes to varying and evolving needs, WHO from its inception decided to set up six regional organizations. This decentralization is now complete, and regional offices have been established, for Africa at Brazzaville, French Equatorial Africa; for the Americas (the Pan American Sanitary Bureau) at



This mother's feet have been mutilated by leprosy. Her baby is *not* condemned. It has been shown that the new sulfone drugs can arrest leprosy and prevent its spread. People who suffer from this disease are being treated and many are being cured. They need no longer live a life apart. (Photo by Pierre Pittet)

Washington, D. C.; for South East Asia at New Delhi, India; for Europe at Copenhagen, Denmark; for the Eastern Mediterranean at Alexandria, Egypt; and for the Western Pacific at Manila, Philippines. These regional offices maintain close co-operation with national health services, in order to carry out one of WHO's principal activities—"to assist public health administrations everywhere to take the next feasible step in their development."

Training of Health Personnel

It soon became apparent that a severely limiting factor was the lack of adequately trained medical and health personnel of all categories in the areas where they were most needed. In recent years, therefore, more and more countries have asked WHO for help in strengthening their national schools and training institutions for health personnel. Individual expert consultants or teams of various health experts are sent by WHO to different countries according to local needs. Almost all field projects are in some form or another also training grounds for local personnel from the country or region concerned. Furthermore, WHO provided, between 1952 and 1957, eighty-six professors to forty-two medical training institutions in some twenty subjects. Teams of visiting scientists, consisting of 132 professors from fifty-two different medical schools, visited thirty-seven other medical schools in thirteen countries.

In addition, WHO, over the last ten years, has awarded 6,396 fellowships to health personnel from 149 countries and territories for study in 113 other countries and territories. The fellows were usually doctors or graduates in medicine holding other diplomas (65 per cent), nurses (12 per cent), sanitary engineers and sanitarians (6 per cent) and other qualified health workers (17 per cent). The subjects studied fell into three major groups: organization of public health and preventive medicine (58 per cent), control of communicable diseases (28 per cent) and medical education, clinical and basic medical sciences (14 per cent).

Expert Panels and Research

The expert panels on specific health problems established by WHO have proved so useful that by 1958 their number had increased to thirty-six. They include about a thousand health authorities and leading medical scientists from all over the world, and cover subjects as varied as addiction-producing drugs, maternal and child health, insecticides, mental health, nursing, nutrition, professional and technical education and, of course, leading diseases such as malaria, leprosy, tuberculosis, virus diseases, and others.

From these panels, expert committees are called together when required, to review the latest developments in practice and research in their particular fields and to make recommendations to the Organization which are usually passed on to governments and medical institutions. In addition, WHO has convened a great many study groups on health problems, and particularly those requiring co-ordination of research.

A good example of WHO's work in co-ordination of research is the setting up of the World Influenza Centre in London in 1947, to which, in subsequent years, a network of national influenza laboratory centres was attached, working in

close co-operation also with the International Influenza Center for the Americas at Montgomery, Alabama. By 1958, there was a total of sixty such WHO-designated influenza centres in forty coun-



There were hundreds of millions of sick and crippled people who needed and were not receiving medical care at the end of the last world war. This polio-stricken Japanese boy is one of many who have been helped by services of WHO and UNICEF during the past ten years. (Photo by Dominique Darbois)

tries. When an outbreak of influenza occurs the influenza centre in the area concerned reports its extent and severity and identifies the type of virus concerned. Strains of this virus are then sent to the two international centres where they are cultured for vaccine production. The value of this influenza network was strikingly exemplified during the world-wide epidemic of "Asian" influenza in 1957, when a number of countries were able to prepare vaccine even before the epidemic reached them.

International Quarantine

When WHO came into being it took over the responsibility for the administration of the existing "international sanitary conventions," regulating quarantine practices in the signatory nations. However, there was no uniformity and certain of the

regulations were excessively strict. This multiplicity of conventions was therefore replaced by a single code, the "International Sanitary Regulations," which were adopted by the Fourth



Health begins when life begins. This Indian mother will have the care she needs to ensure that her child is born in good health. WHO and UNICEF are helping many countries to train personnel capable of providing mother and child health services (Photo by Eric Schwab)

World Health Assembly in May, 1951, and came into force on October 1, 1952. The new regulations are designed to give the greatest protection against the spread of epidemic disease with minimum interference with travel and trade. One hundred and forty-five states and territories have accepted these regulations without reservations and twenty-two with reservations that were found admissible by the World Health Assembly.

The epidemiological intelligence service, which warns of the occurrence anywhere of the "quarantinable" diseases (plague, cholera, yellow-fever, smallpox, typhus and relapsing fever) has been greatly strengthened and expanded since 1948. Daily bulletins are transmitted by short-wave radio from the WHO Headquarters, Geneva, to all parts of the world, while weekly regional bulletins are broadcast from Alexandria and Singapore and a network of stations in Southeast and Eastern

Asia, so that not only public health authorities everywhere but also airports, ports and ships at sea can pick them up. In addition, a printed weekly epidemiological record, including statistics on many important diseases, is given world-wide distribution by air-mail from Geneva.

Standardization of Drugs and Medicaments

Another service rendered to governments by WHO was the publication of the *International Pharmacopoeia*, the first volume of which appeared simultaneously in English and French in 1951, and the second in 1955. Both are also published in Spanish editions. The *International Pharmacopoeia* contains specifications for 400 pharmaceutical preparations which are recommended to serve as a basis for the establishment of national specifications. In the field of biological standardization, WHO has established fifty new standards since 1948, ranging from diphtheria antitoxin to a whole series of antibiotics. In this work, more than 100 laboratories in different parts of the world have co-operated.

Before any problem can be tackled, its extent must be measured. This is particularly true of health problems and WHO has, during the last ten years, helped countries to improve and standardize their methods of collecting and interpreting mortality and morbidity statistics.

WHO also issues a series of statistical studies on the most important diseases and publishes each year a volume of *Annual Epidemiological and Vital Statistics*.

WHO has published technical works comprising more than 200 titles covering some forty health subjects. The *Technical Report Series* embodies about 150 reports of Expert Committees and Study Groups, while almost forty *Monographs* have been produced dealing with specific health problems. In addition, there are the *WHO Chronicle* and the *WHO Bulletin*, both technical periodicals, the *International Digest of Health Legislation*, and a number of publications dealing with medical training.

Future WHO Programs

With widespread advances against ancient diseases recorded in its first ten years of work, the World Health Organization is now giving increasing attention to new health hazards found in an age of developing industrialization. One of the major concrete results of the eleventh World Health Assembly planning future programs was the resolution on atomic energy. The assembly requested the Director-General:

1. To prepare a program of concrete measures in the field of health aspects of the peaceful uses of atomic energy and their long-term implications.
2. To give early emphasis to "research designed for determining the relationship between radiation dosage and congenital defects and to methods for the notification of such cases."

tion of public health authorities of congenital defects which could be due to radiation."

3. To report also on "methods for the reporting of radiation exposure in individuals."

The resolution clearly took in "radiation from all sources." Radiation from atomic products and x-rays are the same scientifically, and in their effect on the body. The resolution on atomic energy was originally proposed by the Soviet-Russian delegation and after certain modifications it was unanimously approved. Authorities everywhere must move in these directions, said Dr. LeRoy E. Burney, Surgeon-General of USPHS and Assembly President. He reported that in the United States some fifteen states, not yet including Minnesota, have started registration and routine inspections of x-ray equipment. The problem is mainly to have enough trained personnel to do the job.

Among other important decisions of the Eleventh World Health Assembly was the approval of the American proposal for a one-year study of ways WHO can start new research among nations, especially in cancer and heart disease, for which the United States offered \$300,000. The world wide small pox eradication campaign originally proposed by U.S.S.R., was also approved.

The United States Stake in WHO

Economic and social development is needed to heal a sick world of today and set it on its feet. We have in the United Nations and its specialized agencies all the machinery needed for the purpose, but the machinery is idling for lack of financial and personnel support. More than half of the world's population is crying for relief from disease, hunger, premature death and poverty. We have to accept the fact that communism breeds on this filth, disease and human misery. There-

fore, it is extremely important that fortunate well-developed countries like the USA help underdeveloped areas of the world. It is humane for one thing, but beyond that underdeveloped countries cannot develop economically and cannot gain the strength for political freedom unless they are healthy. Fighting disease is an important part of building a strong free world.

American doctors and other health workers have realized the great challenge of WHO. We can be proud that no other nation has contributed to world health as much as the United States. Our government pays a third of WHO's 14 million dollar budget and is spending 63 million dollars in all this year through WHO and other UN agencies as well as two-way arrangements with those nations helped.

Leaders of American medicine and public health have contributed with their special knowledge and skills to most WHO programs. For instance, practically all WHO expert committees have American members. Our public health schools, which are the best in the world, are continuously training doctors and other health workers coming from all over the world. American experts in various fields of medicine and public health, among them many Minnesotans, have been sent as WHO consultants to different parts of the globe.

WHO and other specialized agencies of the UN have shown the way, because there is ample evidence that in the field of public health and improvement of nutrition and other social conditions we have a unique meeting ground for the people and nations of the earth, potentially the most fruitful avenue toward the coveted prize of a world of enduring peace. Therefore, we must continue to give our whole-hearted support to the work of WHO and the United Nations in general.

HEART ASSOCIATION ANNOUNCES AWARD FOR SCIENTIFIC STUDIES

Completing a first decade of research support, the American Heart Association has announced that a total of approximately \$8,000,000 will be expended for scientific studies in the field of the heart and blood vessel diseases during the 1958-59 fiscal year. This is the largest sum the Association and its affiliates have ever spent for cardiovascular research during a single twelve-month period. Funds for this research come from public contributions to the annual Heart Fund appeal.

Awards will include 226 grants-in-aid totalling \$1,540,457 to scientists working in thirty-six states and one foreign country (Lebanon). These grants, made by the American Heart Association's national research committee, represent an increase of more than 20 per cent over comparable grants awarded last year. They are additional to 186 national fellowship awards totalling \$1,523,147 announced earlier this year.

Many of the grants are concerned with still unexplained aspects of the heart muscle itself and of the bodily mechanisms that result in heart failure and heart attacks. Other studies are attempting to clarify the chemical and electrical processes that make it possible for the heart to beat and to maintain the pressure necessary to pump blood through the body.

A major target is atherosclerosis or "hardening of the arteries," the condition underlying most heart attacks and strokes. With high blood pressure, atherosclerosis is responsible for more than 90 per cent of all deaths from circulatory disease in the United States. Studies related to atherosclerosis and high blood pressure account for approximately one-half of the research to be undertaken with the aid of these grants.

Studies of high blood pressure are seeking to determine the underlying causes of this ailment. The role of table salt in high blood pressure, the part played by the kidney, and the possibility that the central nervous system, including the brain, may be involved, are a few of the problems being investigated.

The function of the kidneys and the influence of diet and hormones on the ability of the kidneys to do their work, the possible relationship of heart disease to certain chronic diseases of the lung, the basic cause of rheumatic fever, problems confronting surgeons seeking to transplant the human heart, development of an artificial lung modeled after the human lung to enhance the efficiency of heart-lung machines and other improvements in surgical techniques—these are some other problems being studied with the aid of the Heart Association grants.

Editorials

JOHN F. BRIGGS, M.D.
ARTHUR H. WELLS, M.D.
HENRY G. MOEHRING, M.D.

SEPSIS—A PROBLEM FOR EVERY PHYSICIAN

Sepsis acquired by patients or personnel in hospitals is a serious problem throughout the world. The obvious clinical entity, postoperative sepsis, comprises but a portion of a poorly recognized problem of increasing magnitude. Pneumonitis, pyelonephritis, enteritis and septicemia in medical patients; mastitis and metritis in obstetrical patients; enteritis, conjunctivitis, skin disease in newborn and pediatric patients; furunculosis and dermatitis among personnel, all cause an alarming morbidity and mortality in some hospital populations.

More and more hospitals recognize the problem and the incidence of sepsis rises in those that have sought to control its spread by conventional means. Indeed, septic complications persist in institutions where asepsis, wound care, and communicable disease control are of high standard.

Staphylococcus sepsis is the major apparent problem. Infections by gram-negative bacteria and even yeasts are reported from isolated hospitals as well as geographically grouped hospitals. Specific strains of bacteria have been described as characteristic of individual hospitals. Therapy by antibiotics is only temporarily effectual in each environment because causative organisms emerge that are resistant to chemotherapeutic agents.

Obviously, etiologic factors are present that are of greater importance and more general effect than are encompassed in current concepts. Investigation of hospitals harassed by sepsis has demonstrated environmental factors responsible for the multiplication and periodic spread of organisms in enormous numbers to the nasopharyngeal mucous membranes of patients and personnel.

The rôle of inflamed and traumatized mucous membrane is unappreciated as the crucial portal of entry for bacteria that are spread by the hematogenous route. Acute upper respiratory disease provides opportunity for occasional predacity by organisms that parasitize carriers among patients and personnel. Florid multiplication of the parasitic organisms occurs in the inflamed mucous membranes with the resultant massive dissemination

to the environment. The classical mucous membrane barrier against bacterial invasion is breached by increasingly frequent instrumentation—intubation with irritating plastics that cause chemical burns and unskilled instrumentation that abrades and lacerates. Such wounds incite bacterial invasion of the blood stream. The traumatized mucous membrane is a recognized portal of entry for genitourinary sepsis. The concept must be extended to include the mucous membranes of the respiratory and gastro-intestinal tracts.

Suppression of sepsis in a hospital involves an orderly appraisal of many vectors to determine those hazardous in a particular institution. Much can be learned by inspection, but ultimate success depends upon periodic bacteriologic study of the environment to demonstrate the hygienic safety of routine hospital procedures. It is a paradox that communities with safe water and food supplies should tolerate, hospitals that do not evaluate the bacteriologic quality of their services.

The physician's education enables him to marshal data significant to hospital hygiene. The staff of every hospital must interest itself in safe operation and present the trustees with periodic reports concerning compliance with criteria for hygienic service. It must also stand ready to assume the responsibility for interpreting the data in the form of recommendations for corrective action. Like safety, quality control is a planned program that stems from the top of an organization. The application of current knowledge of the ecology of sepsis is as much the physician's responsibility as the prescription he writes for antibiotic control of infection.

Each hospital staff should establish criteria that assure a hygienic environment. A suggested list includes:

A. Behavior

- Strict isolation of sepsis
- Exclusion from the hospital of staff and personnel with respiratory disease or pyogenic lesions of the skin
- Safe masking habits
- Freshly laundered clothing, clean shoes in aseptic locations
- No beds or litters brought into aseptic locations
- Proper decorum

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B. Inspection

Positive pressure ventilation in aseptic locations
Clean plenum chamber in air conditioner
Clean humidifier in air conditioner
Closed doors in corridors and stair wells

C. Bacteriologic Control

| | | |
|---------------|-------|---|
| Floor count | —OR | 5 or less sq. cm. |
| | —WARD | 10 or less sq. cm. |
| Air | —OR | 10 or less cu. ft. |
| | —WARD | 20 or less cu. ft. |
| Bed rail | | 10 or less sq. cm. |
| Soap | | Sterile |
| Bedside water | | Comparable to local tap water |
| Textile | | 2 mm. zone of inhibition about a swatch imbedded in seeded agar |
| Laundry | | 20 or less sq. ft. |
| Blankets | | 20 or less sq. ft. |

Harassed administrators can recruit effective allies for a continuing program from the women's auxiliary. Housewifely cleanliness, lacking in many hospitals, is a major factor in control.

CARL W. WALTER, M.D.

A CURVE

The accompanying graph depicts the inverted hemiparabola of Parfait. Essentially, it is the curve of approach of an organism to a point when the organism travels half the remaining distance to the point per unit of time. In some approximate way or other, it can be applied to anything that has a living factor in it:

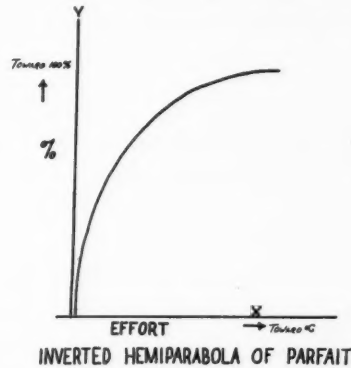
If you plot the contribution from your efforts to others *via* income tax, with the effort plotted along the X axis, and the percentage of your earnings contributed to others as tax along the Y axis, you get such a curve; i.e., the more you exert yourself to earn, the higher the percentage of what you earn goes to benefit of others until, conceivably, if you exert yourself infinitely, the entire proceeds of your earnings would be income tax—and this should be the ultimate of doing good unto others.

Similarly, if you plot the care and energy exerted by everyone to wipe out traffic accidents along the X axis, and the percentage of miles driven accident-free along the Y axis, you'll get this sort of curve; i.e., if everyone really bent every effort to cut out traffic accidents, all miles driven would be accident-free.

And so on . . . right here is a universal truth, if only someone would come along and express it more simply.

This curve can be applied to diagnostic or therapeutic success. Plot the summation of the energy

you expend toward making diagnoses along the X axis and the percentage of correct diagnoses along the Y axis. Same curve. You find that you have a relatively high yield of diagnostic accuracy from the first few ergs expended; e.g., one look



at the patient as a whole and a consideration of his presenting complaint give you, let's say, 25 per cent correct diagnoses. Then you exert yourself moderately with a medical history and a physical examination, a lot of ergs, and your accuracy reaches 67 per cent. Thereafter, the usual everyday aids to simple physical diagnosis, from the laboratory and x-ray studies, past and family medical histories (this takes not only energy, but now the patient is beginning to squander some of your energy by interposing objections to the costs of some of this energy expenditure) and your accuracy goes up to maybe 90 per cent. Now comes that flat part of the curve at the top. If you really open all the stops, you exploit the extraordinary diagnostic procedures (time-consuming blood chemistry determinations, biopsy, therapeutic trials, exploratory operations, et cetera) and, because you haven't fulfilled the requirement of exerting an infinite amount of energy, you never do reach the 100 per cent mark in diagnoses. No wonder they say a specialist is different from a general practitioner only in that he is more thorough—he has to be, he's working on that last 10 to 15 per cent of the curve.

What does all this get you? Throw in the sponge, it's no use after all? Not by any means. All this does is give you a quasi-mathematical explanation of your inability to achieve invariable diagnostic accuracy, and explain to you, and more importantly to your patient, why costs of medical care are going up. It isn't only that enclosed space and personal services are more expensive per unit.

Physicians have long since taken for granted a diagnostic accuracy, or therapeutic efficacy, in the big gains part of this curve. They are all working toward that tough flat part at the top where every unit of gain costs many units of effort. And neither they nor their patients are satisfied with anything less than being well up on that plateau.

H.G.M.

THE PATIENT WITH ACUTE MYOCARDIAL INFARCTION

I. The Diagnosis

Management of the patient suspected of having acute coronary insufficiency with myocardial infarction has three principal phases. Chronologically, these are establishment of the diagnosis, the medical and nursing measures involved in the treatment of the acute illness, and, finally, rehabilitation of the patient. In this editorial, it is my purpose to emphasize the importance of accuracy and also the responsibility on the part of the physician relative to the first phase.

There can be no argument with or criticism of the conscientious physician who diligently administers appropriate emergency measures including the use of opiates, hospitalization and rigid immobilization for the patient who complains of acute discomfort in the chest even though the pain is atypical for acute coronary insufficiency. In the practice of clinical cardiology, a wide variety of symptoms in a wide variety of sites have proved to be the referred distress of coronary occlusive disease. These facts will justify the therapeutic philosophy that suspicion on the part of the physician that prolonged coronary insufficiency has occurred is all the clinical evidence needed for instituting therapeutic and diagnostic studies to confirm or to deny that tentative diagnosis.

This statement has inherent in it a twofold responsibility for the physician—to confirm the diagnosis, which by implication means to treat, or to deny or eradicate that diagnosis if the tentative diagnosis proves to be unfounded.

With the ready availability of hospital facilities and their electrocardiographic and clinical laboratories, typical acute myocardial infarction can be diagnosed readily. Electrocardiograms, made serially, expose the changes characteristic of in-

jury of the myocardium, and tests for transaminase disclose elevated levels in the serum offer specific and diagnostic evidence. On the other hand, elevation of the leukocyte count, fever and accelerated sedimentation rate of erythrocytes lack specificity and must not be used as evidence of myocardial infarction in the absence of the aforementioned specific evidence.

When specific objective evidence to support the diagnosis of heart attack has failed to appear after immobilization and observation in the hospital for a week for the patient who was strongly suspected of having acute myocardial infarction or for proportionately less time for the patient whose presenting symptoms were less suspicious-appearing, the evidence against the accuracy of the initial diagnosis is overwhelming. At this point, a significant responsibility of the physician often is overlooked. Professional and intellectual conscientiousness dictates that either appropriate examinations and consultations should be obtained to elucidate another etiologic basis for the presenting symptom or the physician must accept and explain clearly to his patient that the symptom was of no significance. This implies investigation aimed at locating a cause for the pain in the upper part of the gastrointestinal tract, biliary tree, skeletal or nervous systems, or lungs, in some cases or the decision in others that the symptom was either self-limiting and inconsequential or a manifestation of a psychogenic disorder.

In either situation, emphasis must be placed on eradication of the cardiac diagnosis from the mind of the patient. This must be done not by merely telling the patient that he is improved, but by a clear statement that the initial diagnostic impression was unfounded. Anything short of such complete intellectual honesty has led and will continue to lead to anxiety reactions on the part of the patient with associated morbidity, cardiac awareness and loss of self-confidence.

The improper clinical interpretation of such likely benign electrocardiographic findings as incomplete right bundle-branch block and episodic supraventricular arrhythmias is another frequent breeding ground for cardiac neurosis. When uncertainty exists, professional honesty dictates that appropriate consultation be obtained rather than permit the patient, by word or implication, to carry the burden of unfounded cardiac disease.

MILTON W. ANDERSON, M.D.

MINNESOTA MEDICINE

THE ROLE OF A DOCTOR'S WIFE

The life of a doctor's wife is not usually dull and is never scheduled. Many times I have felt a little abused when I have had to act as both host and hostess for a dinner party, or go unattended to a special function and offer excuses for a busy husband. The blow fell one day when my hostess said, "But we wanted your husband."

A doctor's wife learns early in her married life that his work comes first, before family obligations. She often wonders whether she married him or his profession, until she realizes that she is a vital part of that partnership. Her reaction to her role often has a direct bearing on her husband's practice in the art of healing. The doctor's wife, in common with other women, has the job of homemaking, with the myriad decisions about the family and house. She learns to change the burnt-out fuse, fix the frayed light cord, and cover the rose bushes. Not that many a doctor is not able, but he is either not available, or is accustomed to being waited upon at the hospital and office, and expects things at home to be in working order, too.

I was once told that only a nurse makes a good doctor's wife. The nurse, no doubt, has the advantage of understanding his work and the strains under which he works, but she does not hold all the trump cards on the personality and adaptability side of human nature. Many doctors prefer to leave their worries at the office and hospital, as far as possible, so they appreciate the change of emphasis at home. This may explain why doctors' wives cannot afford to be hypochondriacs; they wouldn't get any attention unless they were quite ill. No doubt many other professions take as much concentration of the husband, but none where the family get so little attention in his field of occupation!

Many doctors are now trying to regulate their schedules so that they can spend more time with their families and their hobbies. But when our daughters were growing up, they rarely saw their father except as a cherished visitor. Many a time some family outing would have to be rudely cancelled, due to an emergency. Many other doctors' wives feel that they have had to bring up their children single-handed, too.

There are many compensations in being a doctor's wife. There is enjoyment in being a sound-

ing board for his account of human foibles (if the husband is in a talkative mood), but every wife knows that she must not repeat any information thus inadvertently learned. The doctor's wife shares in his pleasure in the recovery of a patient. She enjoys the reflected esteem in which her husband and his profession are held and she could not imagine being a part of any profession except that of medicine.

Being a good doctor's wife takes a lot of tolerance, forbearance, interest in people and their welfare, information, intelligence to evaluate and interpret people and their reactions, good nature, physical stamina, and much social consciousness. In other words, the doctor's wife is expected to be expendable, to be able to meet any situation. Socially, she is accepted anywhere so she must not be found unacceptable; mentally, her husband is an intelligent man, so she should make every effort to keep up with him and his various interests, as well as develop some of her own; spiritually, she should not lose sight of the knowledge and skill given doctors of medicine for the healing of sick minds and bodies; and the resiliency of the human spirit.

(Mrs. C. L.) HELEN OPPEGAARD
Immediate Past President,
Woman's Auxiliary, MSMA

CHANGING PATTERNS IN MEDICAL LIBRARIANSHIP

Medical librarianship, like all professions serving the medical sciences, is on the march. Medicine, moving along a superhighway of progress, is heading toward newer and more significant discoveries tomorrow. Libraries cannot be far behind if the best traditions of research and service are to be continued. They must face realities that include increased budgets and more extensive spending. Up-to-date and comprehensive books are doubling in cost since a decade ago. More and still more periodicals in the specialties are becoming necessities. Consideration is focused on microfilm, readers and cabinets as answers to the serious problem of shrinking space.

And while this is happening, professional librarians are watching their own horizons stretch. Librarians have gone far, professionally, since their duties were first defined as the custodial care of books. They have skirted a technical era in which

First of a series of editorials on the doctor's wife.

Sixth in a series of editorials on medical libraries.

EDITORIALS

they applied themselves to the details of classifying and cataloging, of typing and pasting and mending. In smaller libraries, lacking clerical assistants, these essential duties still remain to "do-all" librarians. But even they can hope for liberation from routines and mechanics in order to give a more extended service using the intellectual skills with which education in library science equips them. Agencies are now offering a classifying-cataloging service that delivers books to libraries marked and completely processed even to book cards, pockets and catalog cards ready to file.

In what direction is professional librarianship moving? It is apparent that emphasis is being shifted partially from the angle of service, administration and maintenance and is falling on the function of formal and informal teaching. Working with individuals through research and reading guidance, with instructors on committees, calls for a dynamic program that gives the librarian a real part in the educational activities of an institution.

Formal teaching begins with orientation to potential users and may be extensive—as much as twenty-five hours in some medical schools—or limited to one or two hours in small teaching programs. In either case a thorough coverage of applied bibliography is in order. Teaching communication skills is veering more and more toward the medical library. From the custodian of the printed word the librarian has become the exponent of the correct word, both orally and written. With the influx of medical scholars from all nations, a librarian qualified for this teaching rôle is an asset and a blessing.

The care of the whole patient is a phrase that is much considered in the field of clinical medicine. Educating the whole person is an obligation which medical librarians are doing something about. If the medical library is the only library in the area to which a student or practitioner has access, he is entitled to more than a limited subject range of materials. People need education and re-education throughout their adult life. The medical library offers a unique possibility of keeping doctors and paramedical personnel from developing into one-sided thinking personalities. Informal teaching, through group and individual book guidance, not only aids professional personnel to become book critics and enthusiasts, but it is a contribution toward one of the current problems of our time. As an author expresses the

dilemma, "We have more leisure time, there is more of us and we will live longer." An extended program into cultural and aesthetical subject fields may have a potential impact on the leisure time and aging aspects of the population.

Medical libraries are looking forward to the extension of their influence outside the parent institution. It is not difficult for them to team up—some public health libraries do this consistently—with workers in preventive medicine and to offer materials to auxiliaries, parent associations, philanthropic organizations and clubs which are searching for interesting and timely subjects for lectures and workshops. What librarian does not meet, in the course of one day's work, numerous references to mental health, to child psychology and to all aspects of the geriatric problem? Materials on subjects like these, which in medical literature are undiluted by the popular, and often emotional approach, can affect the thinking of a whole community.

Another recent trend is to regard libraries as materials' centers, that is, a center which will organize, maintain and service slides, films, recordings and tapes as well as books and journals. This calls for still more specialization on the part of library personnel. Since the financial output for a film collection is great, its planning and organization should be done by a specialist and it should be directed toward specific goals. Little imagination is needed to estimate the potentialities of a film collection in the field of medicine. Perhaps there is not a library of any size that has not a sample collection, at least. Because film is the communication media of our age, the most compelling and absorbing attraction of any time, medical libraries of the future cannot avoid providing for it. Sound proof listening rooms for tapes and teletapes as well as for therapeutic music recordings will be as common as the present day reading room. Most journals and many books will be stored in microfilm.

Larger units of service in which libraries join into systems by working together and sharing their services and materials is still another concept of the medical library of the future. Area union catalogs by which the holdings of all medical libraries in a locality will be made accessible to one another will be established in key positions so that libraries and patrons alike may get the most of the printed and filmed deposits of learning within a designated radius.

New and imaginative architecture is transforming dull, highceilinged, uninspiring rooms to light, colorful rooms with full wall windows and comfortable lounge furniture. In the future, temperature and humidity will be kept consistent and right both for patrons and for materials. Air borne dust, a menace in all libraries, will be removed through a mechanism in the air conditioning unit. Undoubtedly, large medical libraries will come in for a share of electronics—brains, book pluckers and material searchers. Even small libraries may hope for pneumatic tube systems leading from the areas of greatest research and study to the library. All of which will help ease personnel shortages in the field, but will never replace personalized services.

With the field of research growing wider and more intense with each succeeding year, librarians are hopeful that soon the public, especially the philanthropic public, will begin to realize the part medical libraries are contributing to the advancement of knowledge. A future in which libraries will share in government and industrial grants, in public and private endowments, is in the forward thinking of every medical librarian. When this becomes an actuality, medical libraries will have come of age.

SISTER TERESA LOUISE
Medical Librarian

THE ROLE OF THE BASIC SCIENCES IN MEDICINE

III. The Physician and the Literature of Basic Science

It is axiomatic that today no one can read the whole of the currently appearing scientific literature in fields like the medical sciences. A few years ago, the German physiologist Rothschild calculated that it would require about three years of full-time reading at a rapid rate to cover the printed output of one year of the physiological literature alone. It would be fair to multiply that time by at least ten to cover the entire medical science field. Thus one sees that it would take the better part of a working lifetime to read one year's output of medical writing. And the situation is getting more serious every year. Fifty years ago, there was only 3 per cent as much literature. Ten years from now, it is likely that there will be twice as much as there is today, if

one can extrapolate from previous rates of increase.

This is a problem which has very serious implications for the future of all science, including medicine. It seems that there can be no easy overall solution to it. Better mechanisms of abstracting and indexing, the introduction of new bibliographic tools, such as high speed sorting and retrieval machines, may assist the research worker greatly and allow him to avoid a great deal of the inefficient searching that he has to do today. Some such improvements will need to be made, however, or the medical research enterprise will become progressively less efficient and the spending of increasing amounts of money will result in decreasing returns on the dollar. In fact it is the opinion of this writer that the point of diminishing return has already been reached and that we should insist that more money should be put immediately into the bibliographic tools of science in order to protect our continuing investment in research.

At present, several agencies abstract the medical and other biological literature, but none of them covers more than a fifth of the total output and they duplicate each other to a very large extent. Furthermore, their abstracts are inadequate in scope so that a researcher cannot definitely ascertain whether an abstracted paper does or does not contain material relevant to his problem in many, perhaps most, instances. There is no adequate index even of titles of all publications in medical science.

The cost of doing a fairly adequate job of abstracting and indexing of the world literature in medicine and related fields might be estimated as five times the present cost of one of the inadequate services. This would mean about two million dollars per year.

In the current year, the U. S. Department of Health, Education and Welfare alone has obligated \$110 million for research. The total U. S. Federal Government obligations for research and development in fiscal 1957 is \$269 million. Thus, one is considering a sum approximating one per cent of the total spent. Obviously, this is a trifle in the total investment, considering the factor of increased efficiency, yet it is not being considered seriously at the present time in terms of a unified centralized operation for solution. The National Science Foundation and the Public Health Service both recognize the reality of the

problem. Greater public understanding of the problem is needed in order to allow investments of such size as to remedy the situation.

The problem for the physician in practice is different, but definitely a related one. He cannot spend more than a few hours a day in reading, and many cannot or do not find even an hour. For the latter category, the situation is hopeless because the advancing front of medical science has already left him far in the rear. But for the majority who make valiant efforts to "keep up" with the new things, there is increasing need for assistance. More and more, there is need for "brush-up" articles in the most widely distributed journals dealing with advances in the basic sciences which must be understood by the practicing physician if he is to grasp the newer advances in clinical medicine itself. Medical teachers and investigators must be willing to devote more time and energy to postgraduate education in all of its phases and by all of the useful mechanisms. And physicians will need to avail themselves of more such opportunities to keep abreast of the scientific times if they are not to become obsolescent practitioners of a craft rather than progressive practitioners of a learned profession. One can be an artisan without understanding. One can practice a learned profession only by remaining a scholar through one's lifetime.

MAURICE B. VISSCHER, M.D.

THE TRANQUILIZERS

Although several tranquilizers are also used widely for other conditions, the most dramatic and important effect of these drugs is the profound change they have brought about in the treatment of the mentally ill. Mental hospitals show many significant signs of this change. The locked back ward is gradually becoming a thing of the past. Psychotherapy is being used on more patients and to a greater extent because more patients have been made accessible through these drugs. More patients are released from mental hospitals, and fewer released patients return.

Furthermore, a significant change has occurred in the practice of the family physician who now finds himself treating mental and emotional disorders which five or six years ago were considered outside his province. By treating the early symptoms of mental illness, he may spare many

patients from requiring hospitalization. By providing maintenance drug therapy, he also prevents the re-hospitalization of many released patients whose illness is still present, but whose symptoms are in remission.

The need for maintenance therapy is not surprising when one realizes that the tranquilizing drugs are ameliorative rather than curative. They no more "cure" mental disorders than insulin "cures" diabetes. Almost all released patients who have received drug therapy require the immediate support of drugs to help them face the stress of returning to the world outside the hospital. Most require it for several months; some may require it—either continuously or from time to time—for the rest of their lives. No one can accurately predict exactly how long any one patient is likely to need maintenance drug therapy.

Tranquilizing drugs are not alone responsible for the growing improvement in treating mental illness, however. The physician's utilization of these new tools coupled with his techniques of psychotherapy is the important contribution.

One of the most notable developments in modern medicine is the resultant increasingly important role the family physician plays in the treatment and management of mental illness.

MAURICE R. NANCE, M.D.

TRANQUILIZER ADDICTS

Physicians are advised to screen carefully requests of patients who desire prescriptions for sleeping pills, nerve pills, and other non-narcotic medications to which they have become addicted. Reports of such requests, received by the Minnesota State Medical Association within the past thirty days, are greater than those for any like period in the past.

Neurotic patients—frequently women—are going from doctor to doctor seeking such prescriptions. Often the reports have come from members of the patient's family who have noted alarming symptoms, mental aberration, or apparent drunkenness. The concerned relatives usually ask the Association to warn other physicians, by name, about the affected individuals. For obvious reasons the Association is unable to comply with such requests. However, it would certainly appear that a general word of caution is in order.

It is recommended that all physicians be on guard when new patients come to them with requests for specific medications. Remember, precautions similar to those recommended for dealing with the transient drug addict are here recommended. These include securing a complete history of the patient's ailment as well as making a complete and thorough examination in every case.

Second of four editorials on tranquilizers.

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

FORAND STRESSES SOCIAL SECURITY HOSPITAL AID NEED

Recently AFL-CIO newspapers published the following account of a radio address given by Democratic Representative Aime Forand in defense of Bill H.R. 9467 sponsored by him.

The presentation was aired on "Washington Reports to the People," an AFL-CIO sponsored public service program heard over 170 radio stations throughout the nation.

"It is most important," Forand declared. "I have a thousand letters here from persons in various parts of the country telling me of their plight. They need hospitalization. They need to have an operation. Yet they cannot afford it.

"The result is that they go without and suffer a great deal. If the government would actually step in, it wouldn't be the taxpayers paying the bill, but those who contributed to the system and who will be the beneficiaries."

Forand noted that retired persons "have reached that age when it is practically impossible for them to get private insurance. The government must take care of that."

Hospitalization and a ten per cent increase in benefits are provided for in the Forand bill, on which hearings have begun in the House Ways and Means Committee. Forand said that he did not consider the 10 per cent boost in benefits adequate, but "it is as much as I think we can get at this time."

The bill would increase the wage base, upon which the tax is based, from \$4,800 to \$6,000, which would add to the trust fund.

"The American Medical Association has gone on record as ready to put up an outright fight against the plan," Forand reported. "They're going the limit. They've engaged a public relations firm to advise them. They've put out all kinds of documents. They're doing a thorough lobbying job."

Forand said that all members of the AMA are not in agreement with the Association position.

"There is absolutely nothing in the bill that would place control on medicine," Forand said. "It gives the individual the privilege of selecting his own physician, his own surgeon, the hospitals to which he will go."

MINNESOTANS DO NOT NEED FORAND BILL, DELEGATION TOLD

United States senators and representatives from the state of Minnesota recently received copies of the Minnesota State Medical Association policy toward the Forand Bill (H.R. 9467).

The statement of policy, prepared by the Association's congressional legislative committee and signed by President Horatio B. Sweetser, was read into the recent hearings of the House Ways and Means Committee.

The report points out that in the opinion of the committee the Forand bill and other related bills are unnecessary, because the program as outlined in the pending legislation would be more costly than the present outstanding Minnesota aged medical care program.

According to the report:

"Any citizen of Minnesota who is over 65 and cannot afford complete or even partial medical care is eligible for free medical, hospital, nursing home, and dental care; and, all drugs, glasses and appliances are given to him at no cost. This applies to those persons who are on Old Age Assistance (3500) and to those who need extra help even if they are receiving Social Security (1400). The program is administered by the County Welfare Boards. It provides for free choice of hospital, nursing home if within a maximum cost range, and physician. Since the program was established in 1945, there has been an excellent working relationship between the Minnesota Department of Public Welfare, the recipients and the medical vendors. The average age of the recipients is seventy-seven years. In 1956-57 there were 50,244 cases which cost \$18,642,684."

The committee also noted in the report:

"By letting the local County Welfare Board administer the program, only those who cannot afford medical care are made eligible for free care. It is also interesting to note that the local County Medical Society and the other health agencies cooperate very closely to help keep expenses at a minimum."

"The Minnesota State Medical Association's Committee on Geriatrics and Chronic Illness has received all the recommendations of the Joint Council to Improve the Health Care of the Aging. They are working to implement many of those suggestions and already some have been completed. For example, Minnesota long ago set up licensing standards for nursing homes. Presently

MEDICAL ECONOMICS

there are twenty-two new nursing homes and homes for the aged under construction. This will give us 701 more beds: 621 nursing home beds and 80 home for the aged beds. In 1957, eight new homes were completed adding another 166 nursing home beds and 129 beds for the aged. It has been recommended by our Department of Health that we need many more beds and our Committee on Public Policy as well as the Geriatrics Committee are working on the problem. Next year in the state legislature there will be a bill which would encourage through a financial matching fund the continued construction of nursing homes by non-profit groups.

"The Geriatrics Committee cooperated with the Department of Health in Minnesota in doing a pilot study in Wright County on home nursing services for the aged and disabled. Data obtained from this survey has helped the state in assessing the need for more home nursing courses, nursing home beds, and public health visiting nurses. It was found, for example, that a roster of trained younger people who will be available to help care for older people in their homes is necessary for the county. Private groups were encouraged to continue loaning medical equipment to the home bound patients. It was recommended that the Red Cross home nursing courses be expanded, that the county needs a recreation center for the senior citizens and that county nurses make older home bound people their first priority."

We sincerely hope that this statement will assure the committee that Minnesotans do not need H.R. 9467, concluded the report.

Members of the Minnesota congressional delegation have predicted a possible ten per cent increase in social security benefits, but the Forand proposal is not expected to receive committee approval this year.

A recent issue of the *Wall Street Journal* predicts:

"A social security bill will likely pass the House, but Chairman Byrd (D., Va.) of the Senate Finance Committee will try to hold it up. The measure probably would boost the maximum amount of income subject to the social security tax each year and contain a small increase in the tax rate."

Political Overtones of Social Security

Political observers are noting with interest the election year implications of pending social security legislation. Legislators favoring a hike in benefits may be casting an envious eye toward the growing ranks of senior citizens for potential votes.

According to recent Census Bureau estimates, there are now in excess of 15 million Americans in the sixty-five years and older age bracket. This is a 21 per cent increase over 1950.

In the forty-five to sixty-year age range, there are

another 35 million persons, an increase of 12.8 per cent since 1950.

According to *Nation's Business*, those congressmen who oppose social security increases at this time base their sentiments on the following facts:

- Persons drawing benefits now number more than 11 million, an increase from 9.3 million last year.

- Cost will reach \$8.7 billion in year ahead—up from \$6.7 billion total year ago.

- Income will fall short of outgo.

Result:

- Trust fund will decline in years to come—even without new benefits, even with tax increases now in the law.

- Fund total was \$23 billion last year.

- Six months ago it was expected to fall to \$22.5 billion this year, slide off another \$1 billion next year.

- Now the outlook's being revised again—downward, to \$19 or \$20 billion by 1962. Actuarially it's regarded as underfinanced for the long run—although tax rises are already scheduled.

- Rates will go up next on January 1, 1960, again in 1965, 1970, and 1975.

- Some congressmen are beginning to worry about mounting cost, diminishing trust fund—in face of fact that by 1975 one American in ten will be sixty-five years or older.

- Even with no increase in benefits, tax rates will nearly double by 1975.

Example:

- Person with annual pay of \$4,200 now pays \$94.50 tax.

- In 1975 he'll pay \$178.50.

- Employer will have to match this.

Free Choice Out—He Says

Members of the medical profession who believe that the free choice of physician in the United States is one of those "certain inalienable rights" would do well to note the thinking of those who disagree.

Michael M. Davis, long a leading advocate of compulsory health insurance, who recently spoke before the Group Health Insurance Federation of America in Chicago, made these comments on behalf of such a plan:

"People's minds must be changed so that they will understand that 'freedom of choice' (of physicians) is actually quite meaningless today. The average citizen is in no position to make a wise choice of physicians, par-

particularly not when he may need the services of a number of kinds of specialists. As we view present trends, it seems safe to predict that within ten years no more than ten per cent of payments for medical care will be made on a fee for service basis.

"The term, 'socialized medicine,' is used very loosely, indeed, by many agencies. I would like to point out to them that even the conservative Eisenhower administration has fostered the passage of legislation to provide medical care on a completely socialized basis for 2¼ million dependents of military personnel (Medicare)."

"The problem," Davis said, "is one of organization of medical services. Group practice is part of it. Hospital staff organization controlling the quality of care is equally important. Organizations for combating particular diseases or for meeting the needs of particular groups can go on and probably will.

"All of this seems to me to be good, but all such developments must be kept in perspective. Let me repeat that the organization of medical services is the major problem that lies ahead of us.

"In New York City today, no less than 40 per cent of all physicians are working on a salary basis and one-half of these are specialists."

Davis said that medical societies are beginning to realize they "are actually fighting against irrepressible trends. . . . Eventually we must extend group payment to the whole population."

VOLUNTARY PREPAYMENT PROGRAMS PAY \$11 MILLION PER DAY

More than \$4 billion—a rate of about \$11 million per day—of the nation's health care bill will be paid in 1958 through voluntary health insurance programs, according to the Health Insurance Council, New York.

This estimate was based on the results of the council's 1957 survey of Health Insurance coverages in the United States. Benefit payments to help cover the cost of hospital, surgical, and medical care, last year amounted to \$3.5 billion, up 20.7 per cent over 1956, and an all-time high.

The Council, in a projection of its 1957 figures on health insurance coverage in the U. S., estimates that some 123 million persons are protected against the cost of hospital expenses through voluntary prepayment programs, 111 million for surgical expenses, 74 million for regular medical expenses, and 15 million for major medical expenses. This means that about 72 per cent of the total U. S. civilian population today is protected by some form of voluntary health insurance.

Coverage through insurance companies under all forms of major medical programs rose by 49.4 per cent to 13,262,000 persons.

CIVIL DEFENSE CO-ORDINATOR NAMED

Marvin D. Tyson joined the Division of Local Health Administration staff July 1 as Civil Defense Co-ordinator. He will be responsible for keeping the Civil Defense Health, Medical and Special Weapons Defense Service plans current and co-ordinated with other Civil Defense services, maintaining an inventory record and status review of the pre-positioned Civil Defense medical supplies and equipment in Minnesota, and developing orientation and training programs to implement the Civil Defense medical plans. He will be available to medical, hospital and allied groups in their Civil Defense staff orientation and training activities.

Mr. Tyson comes to the Department of Health from the Minnesota Civil Defense Survival Plan Project.

Prior to his work with the Survival Plan Project, Mr. Tyson has had extensive experience with the State Department of Public Welfare, the American National Red Cross and Minnesota county welfare boards.

EYE FOUNDATION AND AMA DISAGREE WITH OPTOMETRISTS

The National Foundation for Eye Care and the American Medical Association are opposing a proposal of the American Optometric Association to authorize optometrists to make examination for blindness in all government programs. Following testimony by the optometrists to the House Ways and Means Committee, both professional groups sent letters to Chairman Wilbur Mills. The foundation repeated the argument that every time a person is declared blind by an optometrist alone, a chance is lost to determine the true medical cause of the blindness and to appraise chances of rehabilitation or cure.

The issue came before the Ways and Means Committee because it is now considering changes in the social security law, which authorizes optometrists to determine blindness in public assistance cases. The AMA also urged that for the protection of patients this authorization be dropped.

President's Letter

SCHOOL HEALTH

As we come toward the beginning of the school year, the importance of the health of the school age child may be reiterated. Concerned with the health of the school age child are not only physicians, dentists and public health nurses, but also school administrators and school personnel, voluntary health organizations and others, and, of course, particularly the parents. It is an accepted principle that the health of the child is the primary responsibility of the parents. But various agencies and organizations are also concerned. Next to the parents, the physician and then the school and public health authorities carry the responsibility; and we cannot forget that the teacher faces the children much of their day throughout the school year.

The Minnesota State Medical Association plays an active part in helping meet the health problems of children through its committees on child health and immunization and medical service. Committee members participate in the development of inservice training programs for physicians and dentists, nurses, school administrators and teachers.

At the invitation of Dr. A. B. Rosenfield of the State Board of Health, your president had an opportunity to represent the Association at a Minnesota Conference on Physicians and Schools, for school administrators, county superintendents of schools, physicians and dentists and nurses. Members of school staffs from all over the state were present, from Warroad to Caledonia, from Biwabic to Worthington. This conference was planned by the State Department of Health in co-operation with the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Association of School Administrators, Minnesota Department of Education, the Minnesota Congress of Parents and Teachers; with the co-operation and financial support of the Minnesota Heart Association.

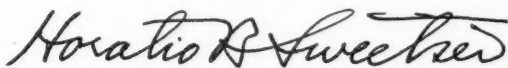
School health programs are usually divided into three sections: health services, healthful school living, and health instruction. This conference considered each aspect of the program in group sessions which permitted a discussion of the individual problems of the participants and active participation by all. The case history method

PRESIDENT'S LETTER

was often used and your president was much impressed by the breadth and depth of the problems and discussions.

In the larger cities, not every physician is called upon, nor is able to help solve the problems. In the areas with fewer doctors, their contact with schools is much more widespread. As an example, in Minneapolis there is a Central School Health Council composed of representatives from the community as well as from the schools. This Council consists of 40 to 50 members and the members come from parent teachers association, welfare agencies, civil defense, community chest, etc., together with school and public health administrators and board of education. As is proper, several physicians are in this group. Besides this, there is a medical advisory committee appointed by the County Medical Society at the request of the Superintendent of Schools. Both of these groups have stated meetings and they are finding, as we always do, that personal acquaintance increases understanding and respect on both sides. At these meetings is considered not only the health of the school child but, as an essential factor in that, the health of the school staff, teacher, janitor, clerk, bus driver, and all the others who come into contact with the child.

At this time of year, requests will be coming to physicians throughout the state for advise and co-operation, for physical examinations, for aid in setting up training programs for health, for help to physical education teachers and coaches in prevention of injuries. The Committee on Child Health under Dr. Logan has studied this problem and can be of great help to all of us. We should not hesitate to call on them. This committee has also studied juvenile delinquency and has been active in helping to develop the "Teen Age Code." Dr. Proffitt's Committee on Medical Service is actively studying athletic injuries and their care. We hope that all co-operation can be given by physicians so that supervision of health problems, both school and community, will remain where it belongs, with the medical profession.



President, Minnesota State Medical Association

Report on Actions of AMA House of Delegates

Distinguished Service Award Recipient

Dr. Frank Hammond Krusen, professor of physical medicine and rehabilitation at the Mayo Clinic, Rochester, was voted to receive the 1958 Distinguished Service Award of the AMA at the 107th annual meeting of that group held June 23-27 in San Francisco.

The Minnesota physician was named for his outstanding achievement and contributions in the field of physical medicine and rehabilitation.

Special AMA citations to laymen for outstanding service in advancing the ideals of medicine and contributing to public welfare were awarded to Mrs. Charles W. Sewell of Otterbein, Indiana, who has spent forty-five years in rural health work, and Gobind Behari Lal, Ph.D., distinguished science writer and Pulitzer prize winner.

United Mine Workers

Final action on two resolutions adopted in December, 1957, dealing with medicine and the UMW Welfare and Retirement Fund, were postponed until the final report of the Commission on Medical Care Plans is received at the AMA clinical meeting in Minneapolis in December, 1958.

One of those resolutions, Number 20, declared that "a broad educational program be instituted at once by the American Medical Association to inform the general public, including the beneficiaries of the Fund, concerning the benefits to be derived from preservation of the American right to freedom of choice of physicians and hospitals as well as observance of the 'Guides to Relationships Between State and County Medical Societies and the UMW Welfare and Retirement Fund' adopted by this House last June." The other resolution, Number 24, called for the appropriate AMA committee or council to engage in conferences with third parties to develop general principles and policies which may be applied to their relationships with members of the medical profession.

The House of Delegates, by a vote of 110 to 72, adopted a floor amendment "that this section of the Reference Committee report be amended to show that our AMA Headquarters Staff is directed, under supervision of the Board of Trustees, to proceed *immediately* with the campaign which was originally ordered at Philadelphia last December, that no further delays will be tolerated, and that the Council on Medical Service be relieved of any further responsibility in this matter."

Social Security Coverage

In considering seven resolutions dealing with the inclusion of self-employed physicians under the Social Security Act, the House disapproved of three

which called for polls or a referendum of the AMA membership, one which favored state-by-state participation in Social Security, and two which called for compulsory inclusion on a national basis. Instead, the House adopted a resolution pointing out that "American physicians always have stood on the principle of security through personal initiative," and reaffirming unequivocal opposition to the compulsory inclusion of self-employed physicians in the Social Security system.

On the question of polls, the House expressed the opinion that any poll should be taken on a state-by-state basis and the results transmitted to the AMA delegates from that state.

Voluntary Health Organization

The House adopted the following statement offered in the form of amendments from the floor for dealing with problems that have arisen in the raising and distributing of funds since development of the concept of united community effort:

"1. That the House of Delegates reiterate its commendation and approval of the principal voluntary health agencies.

"2. That it is the firm belief of the American Medical Association that these agencies should be free to conduct their own programs of research, public and professional education and fund raising in their particular spheres of interest.

"3. That the House of Delegates respectfully requests that the American Medical Research Foundation take no action which would endanger the constructive activities of the national voluntary health agencies.

"4. That the Board of Trustees continue actively its studies of these perplexing problems looking forward to their ultimate solution."

Veterans' Medical Care

The House urged Congressional action to restrict hospitalization of veterans at VA hospitals to those with service-connected disabilities. It also recommended that the American Medical Association suggest to the Dean's Committees that they restrict their activities to Veterans Administration hospitals admitting only patients with service-connected disabilities.

The Medicare Program

The House reaffirmed the action taken last year in New York recommending that the decision on type of contract and whether or not a fee schedule is included in future contract negotiations should be left to individual state determination. Also reaffirmed was the Association's basic contention that the Dependent Medical Care Act as enacted by Congress does not require fixed fee schedules; the establishment of such schedules would be more expensive than permitting physicians to

charge their normal fees, and fixed fee schedules would ultimately disrupt the economics of medical practice.

Washington Office

The House adopted a resolution requesting the Board of Trustees to make an immediate survey and re-evaluation of "the functions and effectiveness of the over-all AMA legislative system, including the Washington office, in the light of present-day needs of the government, public and medical profession alike for effective liaison between government and medicine on all matters affecting the public's health and adequate, prompt and accurate transmittal to the full membership of the AMA of information on all current public issues in which the physician has a direct interest."

Medical Aspects of Hypnosis

A Council on Mental Health report on "Medical Use of Hypnosis" was approved by the House, which recommended that it be published in the *Journal of the AMA* with bibliography attached. The report stated that general practitioners, medical specialists and dentists might find hypnosis valuable as a therapeutic adjunct within the specific field of their professional competence. It stressed, however, that all those who use hypnosis need to be aware of the complex nature of the phenomena involved. Teaching related to hypnosis should be under responsible medical or dental direction, the report emphasized, and should include the indications and limitations for its use.

Over-the-Counter Medications

The House endorsed recommendations by the Public Relations Department that:

The AMA join with other interested groups in setting up an expanded voluntary program, coordinated by the National Better Business Bureau, which will seek to eliminate objectionable advertising of over-the-counter medicines.

The AMA counsel with the National Better Business Bureau in the selection of a physicians' advisory committee.

The established facilities of the AMA, such as the Chemical Laboratory, the offices of the various scientific councils, and the Bureau of Investigation, be made available, so far as is feasible, to aid in the carrying out of this program.

The Public Relations Department continue its liaison work with the various groups involved and assist in the development and operation of this program in any way possible.

The AMA should become a sustaining member of the National Better Business Bureau.

Opening Session

Dr. David B. Allman, retiring AMA president, at the Monday opening session urged every physician to rededicate himself to the service of mankind and every medical society to strengthen its disciplinary system "to prevent the very few from besmirching the vast majority of us." Dr. Gundersen, then president-elect, said the Association is moving ahead in finding the best possible ways to serve both the public and the medical profession, and he declared there is no reason to believe that its influence and impact will not continue to grow in the times ahead.

Inaugural Ceremony

Dr. Gunnar Gundersen, in his Tuesday night inaugural address, called upon the medical profession to accept its full responsibilities in promoting better world health, brotherhood and peace, adding that "the time has come when medical statesmanship must be used to augment the methods of political diplomacy." Dr. Gundersen also presented the Distinguished Service Award to Dr. Krusen and the special layman citations to Mrs. Sewell and Dr. Lal. The Shrine Chanters of Oakland, Calif., provided choral numbers during the program.

Election of Officers

Dr. Louis M. Orr, urologist of Orlando, Fla., was chosen unanimously as president-elect for the coming year. Dr. Orr, who in recent years has been vice speaker of the House of Delegates and chairman of the AMA Committee on Federal Medical Services, will become president of the American Medical Association at the June, 1959, meeting in Atlantic City. He then will succeed Dr. Gunnar Gundersen of La Crosse, Wis., who became the 112th president at the Tuesday night inaugural ceremony in the Rose and Concert Rooms of the Sheraton-Palace Hotel.

Dr. W. Linwood Ball of Richmond, Va., vice president; Dr. E. Vincent Askey of Los Angeles, re-elected speaker, and Dr. Norman A. Welch of Boston, vice speaker, were other officers elected.

Dr. Warren W. Furey of Chicago was elected for a five year term on the Board of Trustees. Dr. Raymond M. McKeown of Coos Bay, Ore., was re-elected for a five year term, and Dr. R. B. Robins of Camden, Ark., was named to fill the unexpired term of Dr. F. J. L. Blasingame. Dr. Leonard W. Larson of Bismarck, North Dakota, was elected chairman of the Board at its organizational meeting.

Meetings and Announcements

MEDICAL MEETINGS

State

Conference on Electrical Techniques in Medicine and Biology, eleventh annual session, Nicollet Hotel, Minneapolis, November 19, 20 and 21, 1958.

Northern Minnesota Medical Association, annual meeting, Detroit Lakes, September 5 and 6, 1958.

NATIONAL

Academy of Psychosomatic Medicine fifth annual meeting, Park Sheraton Hotel, New York City, October 9-11, 1958.

American Association of Medical Assistants, second annual convention, Palmer House, Chicago, Illinois, October 31, November 1 and 2, 1958.

American College of Surgeons, 44th annual Clinical Congress, Chicago, Conrad Hilton Hotel, October 6-10, 1958.

American Rhinologic Society, fourth annual meeting, Palmer House, Chicago, Illinois, October 17-18, 1958.

Fifth Annual Conference of Mental Health Representatives of the State Medical Associations sponsored by the AMA Council on Mental Health, November 21 and 22, 1958, Drake Hotel, Chicago.

Gerontological Society, Inc., Bellevue Stratford Hotel, eleventh annual scientific meeting, Philadelphia, Pennsylvania, November 6, 7, and 8, 1958.

National Society for Crippled Children and Adults, 1958 convention, November 16-20, Statler Hotel, Dallas, Texas.

One-day course in Cardiac Resuscitation, Emory University School of Medicine, Atlanta, Georgia, October 3, 1958. Write Postgraduate Education, Emory University School of Medicine, 69 Butler Street, SE, Atlanta 3, Georgia, for further information.

Second Oklahoma Colloquy on Advances in Medicine, Arthritis and Related Disorders, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma, November 12, 13, 14 and 15, 1958.

Western Surgical Association, annual meeting, Hotel Kahler, Rochester, November 20, 21 and 22, 1958.

INTERNATIONAL

Fifth International Congress on Diseases of the Chest, sponsored by American College of Chest Physicians, Tokyo, Japan, September 7-11, 1958.

Section of Psychopharmacology of the IV. International Congress of Psychotherapy, Barcelona, Spain, September 1-7, 1958.

Third International Congress of Allergy, sponsored by International Association of Allergology and French Allergy Association, Paris, France, October 19-26, 1958.

REGIONAL AMERICAN COLLEGE OF PHYSICIANS MEETING IS SET

The Midwest Regional Meeting of the American College of Physicians will be held in Milwaukee, Wisconsin, September 27, 1958, at the Milwaukee County Hospital. A scientific program of twenty-two papers of fifteen minutes each has been arranged. A noon luncheon, banquet and entertainment in the evening, as well as a luncheon and entertainment at noon for the ladies, has been scheduled. A cordial invitation has been extended to all physicians, members of the College and non-members. There is no registration fee.

POSTGRADUATE COURSES

The Woman's Hospital in New York City is offering two courses in obstetrics, limited to general practitioners. Each course is approved for thirty hours Category I credit by the American Academy of General Practice. The courses are entitled "Ante-partum Care" and "The Conduct of Labor and Delivery," to be given from October 16-30, 1958. Address Mr. Carl P. Wright, Jr., Woman's Hospital, 141 West 109th St., New York 25, New York, for further information.

MODEL CONSTITUTIONS NOW AVAILABLE

Copies of a model constitution and by-laws have been prepared and mailed to all officers, councilors and secretaries of component medical societies. The model document has been approved by the legal counsel of the Minnesota State Medical Association. The special committee, chaired by Dr. Haddon M. Carryer, Rochester, urges all secretaries to check their own document for possible up-to-date revisions. The committee will also make available to component medical societies characters to those groups who do not have these original documents in their possession.

STATE CHEST PHYSICIANS PLAN WEEKEND DISCUSSIONS

The Minnesota Chapter of the American College of Chest Physicians will hold a weekend of clinical discussions to which physicians and their families are invited to participate, August 30, 31 and September 1, 1958, at Robert's Pine Beach Hotel on Gull Lake near Brainerd. The program will include the symposium on Esophageal disease and will feature Dr. Howard Anderson from the Mayo Clinic and Dr. Robert Priest of Minneapolis, who will discuss the various subjects from the Endoscopist's viewpoint. Another session has been scheduled to include clinical and laboratory experience with the surgical treatment of coronary artery disease. Dr. Joseph Garamella and Dr. Robert Schmidt of Minneapolis will contribute their clinical experience while Dr. John Brainard of Ancker Hospital, St. Paul, will discuss his experiences in the experimental laboratory. Dr. N. K. Jensen of Minneapolis has some film on the problem

(Continued from Page A-34)



when psychic
symptoms
distort the picture

Dartal helps the patient reintegrate his mental processes

In everyday office practice as well as under hospital conditions Dartal is consistent in its effects as few tranquilizers are.

Dartal promotes emotional balance

Dartal effectively decreases or relieves emotional hyperactivity and psychomotor excitement.

Dartal is unusually safe

At a recent symposium, leading hepatologists* concluded that Dartal is not icterogenic or hepatotoxic.

Dartal is effective at low dosage

One 2-mg. tablet q.i.d. or one 5-mg. tablet t.i.d. in neuroses;
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*a superior psychochemical
for the management of both major and
minor emotional disturbances*

Dartal[®]

dihydrochloride

brand of thiopropazate dihydrochloride

*A Symposium on the Pharmacologic Effects of Dartal on the Liver, Chicago, Searle Research Laboratories, Feb. 7, 1958.

MEETINGS AND ANNOUNCEMENTS

STATE CHEST PHYSICIANS

(Continued from Page 598)

of Pectus Excavatum in Children. Dr. Victor Krueger of Nopeming Sanatorium in Minnesota has some interesting data concerning the treatment of the child with the recently converted Mantoux test that should provide some very interesting discussion. Address inquiries to Robert's Pine Beach Hotel, Brainerd, Minn., or Dr. Philip H. Soucheray, 836 Lowry Medical Arts Building, St. Paul 2, Minn.

REPORT GIVES LATEST CHILDREN'S HEARING LOSS DATA

Hearing Loss in Children, a report prepared by the Committee on Conservation of Hearing, has been mailed to members of the association. The brochure includes many significant advances in the field of preservation and restoration of hearing. The information included in the publication is considered by the committee to be a summary of current opinion concerning management of hearing-handicapped children. Please substitute the current report for the 1954 document in your reference files.

LABORATORY ASSISTANTS AVAILABLE FOR PLACEMENT

Upon satisfactory completion of the Course for Laboratory Assistants of the General Extension Division of the University of Minnesota, twenty-five students will re-

ceive certificates on September 18, 1958. The students are trained to do hemoglobin determinations, white blood cell counts, red blood cell counts, normal differential smears and recognition of an abnormal smear, routine urinalysis, titration of gastric acidity, occult blood, BMR tests, EKG tests, blood group typing, and limited blood chemistry determinations (sugar, urea nitrogen, chloride). The students are best qualified to work in a physician's office or to assist a registered M.T. (ASCP) in a hospital or clinical laboratory. Information about the students and the training program may be obtained from Margaret Ohlen, Instructor and Co-ordinator, Medical Laboratory Assistants Program, C205 Mayo Building, University of Minnesota, Minneapolis 14, Minnesota.

FELLOWSHIP FOR WOMEN PHYSICIANS

The Women's Medical Association of the City of New York offers the Mary Putnam Jacobi Fellowship to a graduate woman physician, either American or foreign. This Fellowship will start October 1, 1959, and will amount to \$2000, \$1000 being available October 1, 1959. The recipient of the Fellowship will be expected to make a report to the committee at the end of the fourth month following which the second \$1000 will be awarded subject to the approval of the committee. The Fellowship is given for medical research, clinical investigation or postgraduate study in a special

(Continued on Page A-36)

"ankle-itis"
yes, any rheumatic "itis" calls for
Sigmagen®
corticoid-salicylate compound TABLETS

80-J-358

Schering

The advertisement features a black and white photograph of a human foot and a shoe. The foot is shown from the side, with the heel of the shoe visible. The shoe is a dark, lace-up dress shoe. The text is overlaid on the image, with "ankle-itis" in large, bold, quotation marks. Below it, in smaller text, is "yes, any rheumatic 'itis' calls for". Then "Sigmagen" in large, bold letters with a registered trademark symbol. Below that, in even smaller text, is "corticoid-salicylate compound" and "TABLETS". In the bottom left corner, there is a small number "80-J-358". In the bottom right corner, the Schering logo is written in a cursive script.

X-RAYS SHOW HOW ONE PYRIBENZAMINE® LONTAB®

relieves allergy all day or all night

The unretouched X-ray films show how Lontabs release medication in the digestive tract. So that the prolonged erosion of the Lontab core could be visualized by X-ray, subject was given 10 Lontabs, each containing 100 mg. of a radiopaque substance in place of Pyribenzamine.

With its unique formulation, the Pyribenzamine Lontab not only relieves allergy symptoms promptly, but sustains relief as long as 12 hours.



Special outer shell releases 33 mg. Pyribenzamine hydrochloride within 10 minutes.

Unique core releases approximately 18 mg. Pyribenzamine hydrochloride the 1st hour, approximately 50 mg. from the 2nd to the 12th hour.

SUPPLIED: Pyribenzamine Lontabs — full-strength — 100 mg. (light blue).

NOW AVAILABLE: Pyribenzamine Lontabs — half-strength — 50 mg. (light green) — for children over 5 and for adults who require less antiallergic medication.

PYRIBENZAMINE® hydrochloride (tripelennamine hydrochloride CIBA)
LONTABS® (long-acting tablets CIBA)

U/2562M

C I B A SUMMIT, N. J.

2 hours Lontabs are in the stomach and small bowel. Release of core substance is well under way.



4 hours Lontabs are in the ileum and cecum as core has steadily eroded.



8 hours Lontabs are still visible as substance of core continues to be released.



MEETINGS AND ANNOUNCEMENTS

FELLOWSHIP FOR WOMEN PHYSICIANS

(Continued on Page A-34)

field of medicine. The recipient is expected to devote full time to the Fellowship, but exception may be made by the committee under special circumstances.

Applications for this Fellowship may be obtained from the secretary of the committee† after August 1, 1958, and must be returned before February 1, 1959, with the following information (1) curriculum vitae, (2) a statement from a physician of a recent physical examination, (3) transcripts of her college and medical school records, (4) personal letters of recommendation from two or more physicians under whom she has studied, (5) a statement by the applicant of the problems she proposes to investigate or the study she plans to undertake, (6) a statement from the person under whom she proposes to study of his or her interest in her subject, (7) recent photograph. All the above data must be at hand before the application will be considered.

Successful candidates will be notified not later than May 1, 1959.

†Address Ada Chree Reid, M.D., Secretary,
118 Riverside Drive,
New York 24, New York.

CONTINUATION COURSES

Medical Continuation Courses to be presented at the Center for Continuation Study, University of Minnesota, include:

September 23-25—Pediatrics for Pediatricians
October 6-8—Obstetrics for Specialists
October 23-25—Dermatology for General Physicians
November 3-8—Pediatric Radiology for Radiologists
November 17-19—Fractures for General Physicians
November 17-22—Neurology and Neurosurgery for General Physicians
November 20-22—Physical Medicine for Specialists

For further information concerning the above courses, write to the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The thirty-eighth annual session of the Northern Minnesota Medical Association will be held in Detroit Lakes, Minnesota, Friday and Saturday, September 5 and 6, 1958.

Registration of Association members, Friday morning, and all Scientific Sessions will be at the Armory. Registration for the Ladies Auxiliary, Friday noon, will be at the Detroit Lakes Country Club.

Program

Friday, September 5, 1958

Morning Session—10:00 A.M.

ARNOLD LARSON, M.D., Presiding

"Evaluation of the Transaminase Test."

A. H. WELLS, M.D., Duluth

"Current Recommendations on Immunization."

HENRY H. REED, M.D., Duluth

"Management of the Severe Nose Bleed."

O. E. HALLBERG, M.D., Rochester

"Threatened and Habitual Abortion."

JOHN S. GILLAM, M.D., Fargo, North Dakota

Business Meeting—12:40 P.M.

Luncheon—1:00 P.M.

Armory—Dining Room

Hosts: Clay-Becker Medical Society

Afternoon Session—2:00 P.M.

RALPH ECKMAN, M.D., Presiding

Panel: "Non-Malignant Conditions of the Gall-Bladder and Pancreas."

LYLE HAY, M.D., Surgeon's Viewpoint

E. B. FLINK, M.D., Internist's Viewpoint

"Evaluation of Acute Head Injuries"

LEE A. CHRISTOFERSON, M.D., Fargo

Panel: "Staphylococci and Gran-Negative Septicemia"

1. Incidence, Distribution and Types of Hospital Staphylococcal Infections.

WENDELL H. HALL, M.D., Minneapolis

2. Modes of Spread and Prevention of Hospital Staphylococcal Infections with Emphasis on Surgical Aspects.

CLAUDE HITCHCOCK, M.D., Minneapolis

3. Specific Therapy and Problems of Resistance in Staphylococcal Infections.

JOSEPH GERACI, M.D., Rochester

Annual Banquet—7:00 P.M.

Detroit Lakes Country Club

Presiding—ARNOLD LARSON, M.D., President, Northern Minnesota Medical Association

Remarks—HORATIO B. SWEETSER, M.D., President, Minnesota State Medical Association

Address: "Believe It or Not in Medicine"—E. M. HAMMES, Sr., M.D., St. Paul

Saturday, September 6, 1958

Morning Session—9:00 A.M.

Clinico—Roentgen-Pathological Conference.

Led by H. G. MOEHRING, M.D., assisted by those presenting material and cases outlined. This conference is strictly informal. Free general discussion is encouraged and appreciated.

Afternoon Activity—1:30 P.M.

Golf Tournament—Detroit Lakes Country Club

Woman's Auxiliary

RAMSEY COUNTY AUXILIARY STYLE SHOW

"Saison de Couleur" will be the theme of the Fashion Show which the Woman's Auxiliary to the Ramsey County Medical Society will present on Wednesday, September 17, at a one o'clock luncheon at the St. Paul Hotel.

Mrs. Walter A. Carley is general chairman, with Mrs. Albert Hayes in charge of decorations, Mrs. Francis Lynch, hostesses, and Mrs. Louis C. Lick, Mrs. Clayton Williams, and Mrs. John Galligan, reservations and tickets.

The event promises to be a gala one, with Field-Schlick, Inc., showing the latest colors and styles, modeled by members of the Auxiliary and professional models.

Comments by investigators on

Robaxin[®]

(Methocarbamol Robins, U.S. Pat. No. 2770649)



— the remarkably efficient skeletal muscle relaxant, unique in chemical formulation, and outstanding for sustained action and relative freedom from adverse side effects.

PUBLISHED REFERENCES: 1. Carpenter, E. B.: *Southern Medical Journal* 51:637, 1958. 2. Forey, H. P.: *J.A.M.A.* 167:163, 1958. 3. Little, J. M., and Truitt, E. B., Jr.: *J. Pharm. & Exper. Therap.* 110:161, 1957. 4. Morgan, A. W., Truitt, E. B., Jr., and Little, J. M.: *J. Am. Pharm. Assn., Sci. Ed.* 46:374, 1957. 5. O'Doherty, D. S., and Shields, C. D.: *J.A.M.A.* 167:160, 1958. 6. Park, H. W.: *J.A.M.A.* 167:168, 1958. 7. Truitt, E. B., Jr., and Patterson, R. B.: *Proc. Soc. Exper. Bio. & Med.* 93:422, 1957. 8. Truitt, E. B., Jr., Patterson, R. B., Morgan, A. M., and Little, J. M.: *J. Pharm. & Exper. Therap.* 110:189, 1957.

Supply: Tablets (white, scored), 0.5 Gm., bottles of 50 and 500.

A. H. ROBINS CO., INC., Richmond 20, Va.

Ethical Pharmaceuticals of Merit since 1878

Summary of four new published clinical studies:

Robaxin Beneficial in 95.6% of Cases of Acute Skeletal Muscle Spasm^{1, 2, 3, 4}

| CONDITION | NO. PATIENTS | RESPONSE | | | |
|---|--------------|----------------|----------------|----------|----------|
| | | "marked" | moderate | slight | none |
| STUDY 1¹ | | | | | |
| Skeletal muscle spasm secondary to acute trauma | 33 | 26 | 6 | 1 | — |
| STUDY 2² | | "pronounced" | | | |
| Herniated disc | 39 | 25 | 13 | — | 1 |
| Ligamentous strains | 8 | 4 | 4 | — | — |
| Torticollis | 3 | 3 | — | — | — |
| Whiplash injury | 3 | 2 | 1 | — | — |
| Contusions, fractures, and muscle soreness due to accidents | 5 | 3 | 2 | — | — |
| STUDY 3³ | | "excellent" | | | |
| Herniated disc | 8 | 6 | 2 | — | — |
| Acute fibromyositis | 8 | 8 | — | — | — |
| Torticollis | 1 | — | — | 1 | — |
| STUDY 4⁴ | | "significant" | | | |
| Pyramidal tract and acute myalgic disorders | 30 | 27 | — | 2 | 1 |
| TOTALS | 138 | 104 | 28 | 4 | 2 |
| | | (75.3%) | (20.3%) | | |

THE JOURNAL

Official Journal of the American Medical Association

"In the author's clinical experience, methocarbamol has afforded greater relief of muscle spasm and pain for a longer period of time without undesirable side effects or toxic reactions than any other commonly used relaxants..."²

THE JOURNAL

Official Journal of the American Medical Association

"An excellent result, following methocarbamol administration, was obtained in all patients with acute skeletal muscle spasm..."³

THE JOURNAL

Official Journal of the American Medical Association

"In no instance was there any significant reduction in voluntary strength or intensity of simple reflexes..."⁴

Southern Medical Journal

"This study has demonstrated that methocarbamol (Robaxin) is a superior skeletal muscle relaxant in acute orthopedic conditions..."¹

Communications

Dear Doctor Wells:

The enclosed letter and résumé of the principles followed in legal abortions in Sweden have been received from the Royal Consulate of Sweden in Minneapolis. You may wish to publish this material in MINNESOTA MEDICINE for the information of Minnesota physicians.

Respectfully,
R. N. BARR, M.D.
Secretary and Executive Officer
Minnesota Department of Health

Minneapolis, Minnesota
April 22, 1958

Dear Sirs:

Inquiries from abroad are often received by Swedish authorities regarding the possibilities of obtaining a legal abortion in Sweden. As these are very small, it has been found desirable that the situation should be announced abroad.

Enclosed sheet contains a short résumé of the principles followed in Sweden. I should be much obliged if, through your good offices, the contents thereof could be made known to medical circles or other suitable quarters in the State of Minnesota.

Yours very truly,
GÖSTA AF PETERSENS
Consul General



Brown & Day, Inc.

The Buie Sigmoidoscope

For Proctological Instruments

see your

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CA 2-1843

"Everything for the Physician"

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QUALITY SERVICE

This Section is for you to voice your convictions, comments, and queries on all subjects political, economic, historic, humorous, scientific or otherwise, to many physicians. Writings not sufficiently formal and too brief for an editorial or a scientific manuscript are requested. Clinical and research observations, no matter how brief, similar to those in *The Lancet* (London), are particularly encouraged.

Résumé of Principles

The health authorities in Sweden point out that the chances for alien women to obtain legal abortion in Sweden are very small. Permission for abortion will be granted an alien woman in such cases only, where the giving of birth should seriously threaten her life and health on account of her being ill or incapacitated. In all other cases, a thorough examination is required regarding the applicant and her personal circumstances. Such an examination is to be performed by the curator of a Swedish consultative bureau for questions pertaining to abortions. A trustworthy examination of this kind can be made as regards such persons only, who have resided in Sweden for a longer period of time.

* * *

Dear Sir:

In the April, 1940, issue of MINNESOTA MEDICINE, Dr. L. K. Buzzelle of Minneapolis and myself reported the case of a recurring myxosarcoma of the right inguinal region in a white male who was ten years old. On December 19, 1938, a large myxosarcoma was removed from the region of the right saphenous vein at the fossa ovalis. The tumor measured 10 by 12 cms. in diameter. Dr. E. T. Bell reported that this was a typical myxosarcoma. In March, 1939, a 2 cm. myxosarcoma was removed from the inguinal scar. According to Dr. Buzzelle who has recently seen this boy, he is now married and is raising a family and has had no more recurrences of this highly malignant tumor.

R. B. TUDOR, M.D.
Quain & Ramstad Clinic

Bismarck, North Dakota
July 16, 1958

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*Radium element prepared in
type of applicator requested*

ORDER BY TELEPHONE OR MAIL
PRICES ON REQUEST

make protection
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PRESCRIBE BENSON'S HARDRx SAFETY LENSES!



Eyes worth correcting are worth protecting. All of your patients *deserve* maximum safety from dangerous and costly lens breakage. Benson's HARDRx safety lenses — ground to a formula-determined thickness and scientifically heat-treated — are toughened to resist impact.

To impress on your patients that you've prescribed the ultimate in lenses for them, the identifying tag shown at left is attached to each pair of genuine HARDRx lenses. Your patients will appreciate your thoughtfulness in prescribing this extra protection . . . and will tell their friends of your quality service.

Join the growing number of doctors who specify HARDRx regularly. Remember: HARDRx prescriptions receive the same prompt handling.

1913-1958 . . . Our 45th year

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COMPLETE LABORATORIES CONVENIENTLY LOCATED IN UPPER MIDWEST CITIES

DANIELSON MEDICAL ARTS PHARMACY, INC.

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Insurance at a Saving Druggists' Mutual Insurance Company Prompt Loss Service
OF IOWA, ALGONA, IOWA
Fire Tornado Automobile Insurance
MINNESOTA REPRESENTATIVE—S. E. STRUBLE, WYOMING, MINN.

MINNESOTA BLUE SHIELD-BLUE CROSS

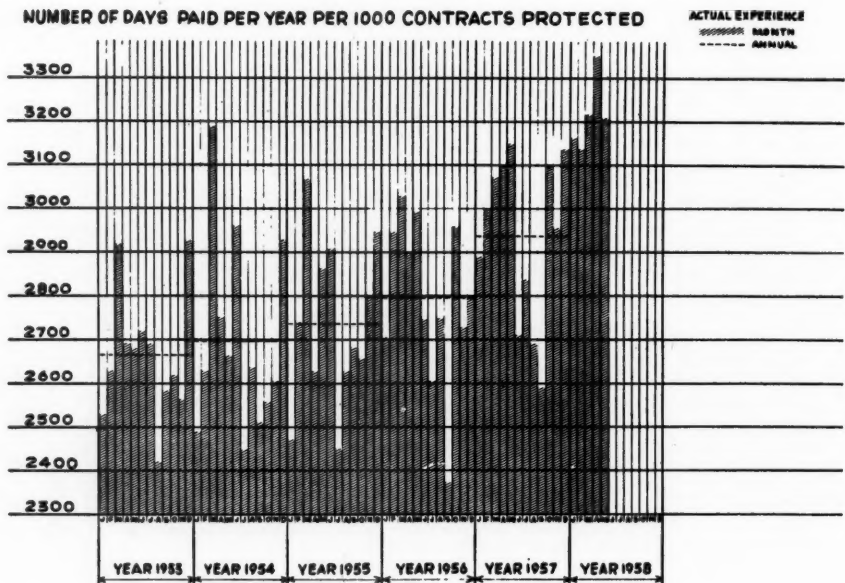
The Blue Shield Plans show a total enrollment of 41,443,640 as of March 31, 1958 according to national enrollment facts recently released. This figure includes enrollment in 72 Plans in operation in 43 of the 48 states, the District of Columbia,

in enrollment among all Blue Shield Plans.

As of May 31, 1958, Minnesota Blue Shield participant subscribers numbered 875,079.

The accompanying graph shows frequency of usage of Blue Cross benefits by subscribers since

Blue Cross Benefits (FREQUENCY OF USAGE)



eight Canadian Provinces, and the territories of Puerto Rico and Hawaii. The 41,443,640 participant subscribers enrolled at the end of the first quarter of 1958 represent approximately 23.5 per cent of the combined populations of the areas served by the Plans.

Enrollment in six Plans, as of March 31, exceeded 40 per cent of the populations served by them, including Connecticut, Delaware, Massachusetts, Michigan, New York, and the District of Columbia. Accordingly, the number of Minnesota Blue Shield participant subscribers equalled over 26 per cent of the State's estimated population.

At the close of the first quarter of 1958 enrollment in each of ten Plans exceeded one million subscribers. Among those Plans with 500,000 to 1,000,000 subscribers, Minnesota Blue Shield was the largest Plan with 871,874 participant subscribers. Thus, Minnesota Blue Shield ranked eleventh

1953 including the first five months of 1958.

It is interesting to note that frequency of hospitalization of Blue Cross subscribers for the month of May, 1958, has continued at the unprecedented high experienced in the previous seven months into 1957.

The incidence rate experienced from October, 1957, through May, 1958, is consistently high in relation to previous years.

Compared with the first five months of 1957, the frequency of subscriber usage of Blue Cross benefits in terms of days paid per year per 1,000 contracts has increased 5.7 per cent.

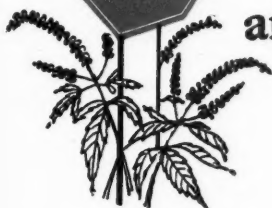
In dollar amounts, Blue Cross payments for hospital care used by subscribers during the first this period is equivalent to one-half day of hospital five months of 1958, exceeded \$14,140,000. The total of 570,274 days of hospital care paid during care provided for every man, woman, and child enrolled in Minnesota Blue Cross.



running noses ...



and other hay fever symptoms



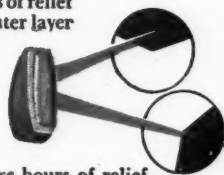
TRIAMINIC stops rhinorrhea, congestion and other distressing symptoms of summer allergies, including hay fever. Running nose, watery eyes and sneezing are best relieved by antihistamine *plus* decongestant action — systemically — with **TRIAMINIC**.

This new approach frequently succeeds where less complete therapy has failed. It is not enough merely to use histamine antagonists; ideally, therapy must be aimed also at the congestion of the nasal mucosa. Triaminic provides such effective combined therapy in a single timed-release tablet.

TRIAMINIC brings relief in minutes—lasts for hours. Running noses stop, congested noses open—and stay open for 6 to 8 hours.

Triaminic provides around-the-clock freedom from allergic congestion with just one tablet t.i.d. because of the special timed-release design.

first—3 to 4 hours of relief from the outer layer



then—3 to 4 more hours of relief from the inner core

Dosage: One tablet in the morning, mid-afternoon and at bedtime. In postnasal drip, one tablet at bedtime is usually sufficient.

Each timed-release **TRIAMINIC** Tablet contains:
Phenylpropanolamine HCl 50 mg.
Pheniramine maleate 25 mg.
Pyriminamine maleate 25 mg.

TRIAMINIC FOR THE PEDIATRIC PATIENT

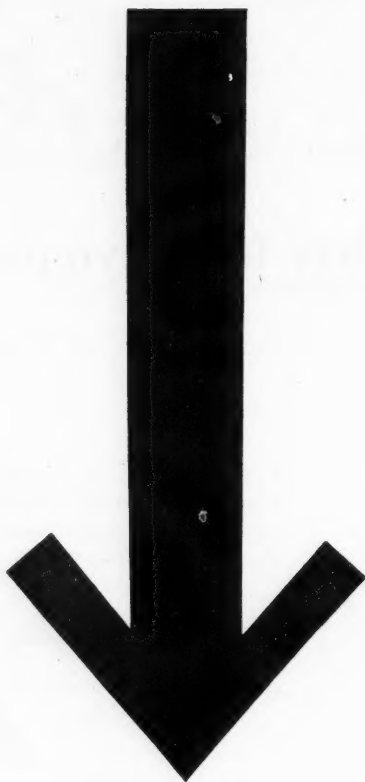
TRIAMINIC Juvelets*, providing easy-to-swallow half-dosages for the 6- to 12-year-old child, with the timed-release construction for prolonged relief.

*Trademark.

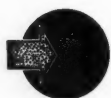
TRIAMINIC Syrup, for those children and adults who prefer a liquid medication. Each 5 ml. teaspoonful is equivalent to $\frac{1}{4}$ Triaminic Tablet or $\frac{1}{2}$ Triaminic Juvelet.

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SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska • Peterborough, Canada



PENETRATES*



SOFTENS FECES



ADDS FORMED BULK



EASES EVACUATION



*Unique encapsulation of millions of minute oil globules by Irish moss assures complete penetrant diffusion in stools.

IN CONSTIPATION

TO SOFTEN STOOLS WITHOUT TISSUE DEHYDRATION
AND MAKE THEM MOVE WITHOUT STRAINING

KONDREMUL®

COLLOIDAL EMULSION OF MINERAL OIL AND IRISH MOSS **patch**

**PROVEN SAFE...EFFECTIVE • IN PREGNANCY • IN
CHILDHOOD • IN MIDDLE-AGED PATIENTS • IN ELDERLY
PATIENTS • THROUGH MORE THAN 25 YEARS OF USE**

AVAILABLE in three pleasant-tasting formulas:

for the average patient

KONDREMUL (Plain)

containing 55% mineral oil. Bottles of 1 pint.

for more hypotonic cases

KONDREMUL WITH CASCARA

0.66 Gm. non-bitter Ext. Cascara per tablespoonful.

Bottles of 14 fl.oz.

for more resistant constipation

KONDREMUL WITH PHENOLPHTHALEIN

0.13 Gm. (2.2 gr.) phenolphthalein per tablespoonful.

Bottles of 1 pint.

patch THE E. L. PATCH COMPANY Stoneham, Massachusetts

70 YEARS OF SERVICE TO THE MEDICAL PROFESSION

ALVIN

Dr. A.
23, 1958
of age.

Dr. N.
Iowa.
Minnesota
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In Memoriam

ALVIN M. NIELSEN

Dr. Alvin M. Nielsen, Northfield physician, died June 23, 1958, of a coronary attack. He was forty-nine years of age.

Dr. Nielsen was born April 4, 1909, at Jacksonville, Iowa. After being graduated from the University of Minnesota, obtaining his medical degree in 1939, he interned at St. Joseph's Hospital, St. Paul, in 1940.

He then began his medical practice in Northfield, being here two years before he entered Navy medical service. He received training at Mare Island and Camp Pendleton, Calif. A lieutenant, he left for overseas in April, 1943. After receiving jungle training in Samoa, he joined the Second Marine Division in New Zealand, then participated in three major invasions in the South Pacific—Tarawa, Saipan and Tinian. He also served on New Caledonia.

For his cool courage under fire and his efficiency in ministering to and evacuating the wounded from Saipan, Tinian, Tarawa and other bloody Pacific battlefields, he was awarded the Legion of Merit, one of the highest Navy decorations.

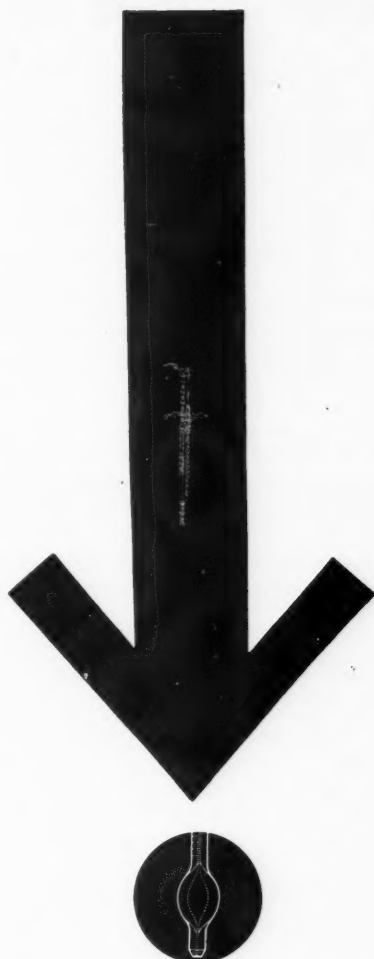
During his South Pacific experiences, he was promoted to battalion surgeon and directed the work of his aid station. He was struck by shrapnel slivers while at work on wounded Marines on Saipan, hence was awarded the Purple Heart. He also held the Presidential Unit Citation awarded to the Second Marine division.

After returning to the United States in the fall of 1944, Lieutenant Nielsen was stationed at the Naval Air Technical Training Center in Chicago. He returned to his Northfield practice in November, 1945.

The doctor was a member of the Exchange Club, Rainbow Saddle Club, Northfield Post No. 84, American Legion, Eugene H. Truax Post No. 4393, V.F.W., the Rice County Medical Society, Phi Rho Sigma Medical Society, Minnesota State Medical Association and the American Medical Association. For some time, he was chairman of the medical phase of Northfield's Civil Defense program. He was a member of St. John's Lutheran church.

He is survived by his wife, Ruby; four children, Gayle, Adrian, Margie, and Timothy; one sister, Mrs. J. C. Hanson of Latimer, Iowa; three brothers, Dr. R. F. Nielsen and Dr. T. G. Nielsen of Cedar Falls, Iowa, and Garfield Nielsen of Los Angeles, Calif.

There is nothing really evil in the term. In Spanish, propaganda means advertising; in religion, it means spreading the faith; in government, it means trying to make ourselves understood abroad. The word came into disrepute when abused by Adolf Hitler's propaganda chief, Joseph Goebbels, and came to mean the big lie.—George V. Allen, director, U. S. Information Agency.



FOR IRON DEFICIENCY ANEMIAS
THE ORIGINAL HEMATONIC
WITH "INSURED IRON"

GLOBOTRIN®
patch

- insured for therapeutic effect by inclusion of vitamin and enzyme metabolites
- insured against side effects by better tolerated ferrous lactate and methylcellulose to maintain "bowel equilibrium"
- particularly valuable for pregnant and geriatric patients
- easy to take — in small, thinly coated tablets

EACH RED, COATED TABLET CONTAINS:
Ferrous lactate 195 mg. (3 gr.)
(supplying 37 mg. elemental iron)
Vitamin B₁₂ crystalline with
intrinsic factor concentrate 0.5 U.S.P. unit*
Thiamine hydrochloride 2.5 mg.
Ascorbic acid 50 mg.
Betaine hydrochloride 60 mg.
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General Interest

Dr. J. B. Redford, fellow in Physical Medicine and Rehabilitation in the Mayo Foundation, has received a scholarship awarded by the National Society for Crippled Children and Adults (the Easter Seal Society) and financed by Alpha Chi Omega, national women's fraternity.

* * *

Dr. C. Walton Lillehei has been named the recipient of the American Therapeutic Society's annual Oscar B. Hunter award for his work in open heart surgery at the University of Minnesota. The award was made in conjunction with the society's annual meeting, held prior to the AMA convention in San Francisco.

* * *

Dr. Anthony J. Bianco, Jr., a member of the Section of Orthopedic Surgery of the Mayo Clinic, received the degree of master of science in orthopedic surgery from the University of Minnesota on June 14, 1958.

* * *

Dr. William F. Skafie, formerly a practicing physician in Little Falls, is now associated with **Dr. S. W. Giere** of Benson.

* * *

Dr. W. O. Finkelnburg has been elected president of the Winona General Hospital medical staff. He replaced **Dr. L. I. Younger**. Officers re-elected were: **Dr. C. W. Rogers**, vice president; **Dr. G. L. Loomis**, secretary; and **Dr. S. O. Hughes**, chief of medicine. **Dr. P. A. Mattison** was elected to succeed **Dr. Finkelnburg** as chief of surgery and **Dr. L. W. Wilson** replaces **Dr. John A. Tweedy** as chief of obstetrics and gynecology.

* * *

The Chippewa County-Monteideo Hospital and the local medical society announce that **Dr. Rolf Andreassen** of Minneapolis, a specialist in heart disorders, is now a member of the consulting medical staff.

* * *

A St. Paul physician, **Dr. George Earl**, one of the founders of Midway Hospital, is now president emeritus of the Association of American Baptist Homes and Hospitals. **Dr. Earl**, founder and first president of the group, was named president emeritus at a meeting held in connection with the American Baptist convention in Cincinnati.

* * *

Dr. John R. McDonald, head of a section of surgical pathology in the Mayo Clinic, and professor of pathology in the Mayo Foundation, left Rochester July 1 to become director of pathology at the Harper Hospital in Detroit, Michigan. He has been a member of the staff of the Mayo Clinic since 1937.

* * *

Dr. G. T. Midboe of St. Paul has taken over the medical practice of **Dr. N. M. Mensheha**, Forest Lake. **Dr. Mensheha**, who has served this area for the past six years, has accepted a three-year residence fellow-

ship in obstetrics and gynecology in the University of Minnesota's school of postgraduate medicine. **Dr. Lloyd Wood**, who has been associated with **Dr. Mensheha**, left Forest Lake in April to join the Olmsted Clinic in Rochester.

* * *

Dr. William F. Mazzitello, assistant professor of medicine at the University of Minnesota and director of post-graduate medical teaching at Ancker Hospital, was a recent noon luncheon speaker at a meeting of the Business and Professional Men's Association. His topic was "Recent Advances in Diagnosis and Treatment of Heart Diseases."

* * *

Dr. J. Bellomo, radiologist, formerly of St. Paul, has become associated with hospitals in Fairmont and Lakefield.

* * *

Nearly 100 physicians, medical specialists, and dentists will locate in the new Southdale Medical Building, officially dedicated June 25. Located at 66th and South France Avenue, Minneapolis, direct from the Southdale Shopping Center, the medical building is on a 2.6-acre site. All medical and dental tenants must be members of the Hennepin County Medical Society or the Minneapolis District Dental Society. The directory list of tenants for the building includes:

Dermatologists: Charles J. Balogh, Carl W. Layman.

General Practitioners: Kristofer Hagen, Kenneth V. Hodges.

Internists: E. F. Englund, R. J. Frey, W. L. Hoseth, P. T. Lowry.

Neurologists: Harris G. Bernhisel, Harold H. Noran, Joseph A. Resch, Robert C. Stolt.

Obstetricians-Gynecologists: Russell N. Frys, Erling T. Hauge, E. William Haywa, Edgar G. Ingalls, Loren J. Jacobson, Donald M. Larson, Paul M. Larson, Roger C. Larson, John B. Maunder, Mancel T. Mitchell, John T. Moehn, Oliver H. Peterson, Jr., Sheldon C. Reed, Owen F. Robbins, Morris S. Rothnem, William B. Stromme, Robert M. Wagner, Nora Winther.

Oculists: L. D. Harris, F. M. Walsh.

Ophthalmologists: Malcolm A. McCannel, Matthew L. Namikas.

Orthopedic Surgery: Edward T. Evans, Paul O. Gustafson, Richard H. Jones, Richard E. Reiley, Frederick G. Rosendahl.

Pathologists: C. W. Freeman, E. A. Hanske.

Pediatricians: H. Agustsson, Irvin H. Moore, D. M. Olson, A. J. Schroeder, Theodore S. Smith, William S. Wright.

Psychiatrists: Robert S. Clark, Donald R. Daggett, Clifford O. Erickson, James T. Garvey, Charles Haberle, Richard D. Kogl, Harold H. Noran, Jennings C. L. Peteler, John J. Regan.

OF GENERAL INTEREST

Psychologists: Robert Wirt, Anne Wirt, Sherman Nelson.

Radiologists: F. J. Anderson, O. J. Baggenstoss, C. O. Hansen, M. B. Hanson, R. M. Iverson, R. S. Johnson, R. E. Nord, S. C. Von Drashek.

Surgeons: Orley W. Foster, Lawrence M. Larson, Virgil J. P. Lundquist, Stanley R. Maxeiner, S. R. Maxeiner, Jr.

* * *

Dr. R. V. Hodapp, a practicing physician in Willmar, has left that city to begin a two-year residency in pediatric training at the University of Minnesota School of Medicine.

* * *

Dr. John M. Berkman, senior consultant in medicine at the Mayo Clinic, discussed highlights in the life of his grandfather, **Dr. W. W. Mayo**, at a program at Le Sueur recently. The event was a kickoff dinner for a fund drive to furnish equipment for the Minnesota Valley Memorial Hospital to be constructed at Le Sueur. Dr. W. W. Mayo, father of Drs. W. J. and C. H. Mayo, lived at Le Sueur a number of years before moving to Rochester. Dr. Berkman's mother was a sister of the Mayo brothers.

* * *

Dr. John M. Waugh, staff member of the Mayo Clinic, has been elected to the Commission on Ecumenical Mission and Relations of the new United Presbyterian Church in the United States.

* * *

Appointment of **Dr. Robert B. Howard** as dean of the University of Minnesota College of Medical Sciences has been announced by Dr. J. L. Morrill, University president. Dr. Howard, associate dean of the college since last fall, succeeds **Dr. Harold S. Diehl** who retired June 30 after holding the deanship since 1935. The new dean has been in charge of the college since Dr. Diehl took a leave of absence last fall to accept appointment as senior vice president of the American Cancer Society.

* * *

Dr. Henry W. Meyerding, of Rochester, will be installed as president of the International College of Surgeons at its meeting in Chicago, September 19, 1958. He will succeed Prof. Dr. Carlos Gama of São Paulo, Brazil.



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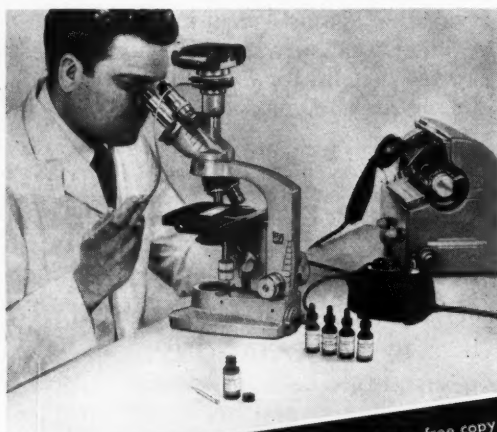
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Dr. Raymond L. Page, after practicing in St. Charles, Minnesota, for thirty-one years, has accepted a position on the staff of the Student Health Service at the University of Minnesota to start September 15, 1958. Through the encouragement of Dr. Page, St. Charles now has a medical facility to accommodate two physicians. His successors in the community are Dr. Dale Hawk and Dr. Samuel M. Hutchinson, both formerly of Ohio.

* * *

Dr. John F. Briggs, St. Paul, was elected chairman of the Board of Regents at the 24th Annual Meeting of the American College of Chest Physicians held at the Fairmont Hotel, San Francisco, June 18-22, 1958. The following physicians from Minnesota were awarded Certificates of Fellowship in the American College of Chest Physicians: **Drs. Charles R. Drake**, Minneapolis, **Joseph E. Geraci** and **Giles A. Koelsche**, Rochester.

* * *

Dr. William Feigl, Thief River Falls urologist for the past ten years, has become associated with the Lakeside Clinic in Fairmont.

* * *

Dr. Harold C. Halverson, a native of Dell Rapids, South Dakota, has become associated with **Dr. D. M. Odland** of Luverne in the practice of medicine.

* * *

Dr. S. H. Mullen, formerly of Fort Yates, North Dakota, has joined **Drs. C. H. Holmstrom** and **E. E. Pumala** in the Warren Clinic at Warren.

* * *

Dr. George C. Bingham has become associated with **Dr. C. R. Heinzerling** of Chaska.

* * *

Dr. Alan L. Goldstein of Minneapolis, a graduate of the University of Minnesota, who interned at Toledo, Ohio, has taken over the practice of **Dr. S. D. Wolstan** in Minnesota.

* * *

Dr. Milton Abrahamson, Minneapolis, announces the association of **Dr. Robert K. Nolan** in the practice of obstetrics, gynecology and infertility.

* * *

Four St. Louis Park Medical Center staff members have recently been promoted at the University of Minnesota. President **James L. Morrill** announced the following promotions: **Dr. George W. Lund** to clinical assistant professor in the department of pediatrics; **Dr. William R. Fifer** to clinical assistant professor of medicine. (Dr. Fifer was made director of the chest clinic at the University Hospitals last fall to succeed **Dr. J. Arthur Myers**, long-time head of the clinic); **Dr. Robert Green** and **Dr. John La Bree** have been promoted to the rank of clinical associate professor in the department of medicine; **Dr. Walter Indeck** has been appointed chief of the orthopedic service at Mount Sinai Hospital.

* * *

About seventy-five guests attended the dinner recently honoring the seventeen members of the twenty-eighth class of dietetic interns who have completed a year's training at St. Mary's Hospital. **Dr. Edward H. Rynearson**, chairman of Sections of Metabolic Diseases at the Mayo Clinic, was the speaker, choosing as his topic,

OF GENERAL INTEREST

"Following a 1,000 Calorie Diet While Traveling in Europe."

Dr. Henry A. Korda and Dr. Homer J. Carlson announce the association of **Dr. Ross Halliday** in the practice of medicine and surgery in the **Korda Clinic** at **Pelican Rapids**.

Dr. Edward A. Banner of the **Mayo Clinic, Rochester**, was recently elected governor of **Rotary International's** southern district of **Minnesota**.

Dr. Howard P. Rome, head of the section on psychiatry of the **Mayo Clinic**, has been elected vice chairman of the **Veterans Administration's** special medical advisory group, it has been announced by **Rep. Albert H. Quie**.

Dr. John F. Briggs, **St. Paul** internist and chairman of the **Minnesota Heart Association's** Professional Education Committee, was scheduled to address the **United Kingdom Chest conference** and **British Tuberculosis Association** meeting, **July 2**.

Dr. Karl W. Anderson, **Wayzata**, medical director of **Northwestern National Life Insurance Co.**, was elected president of the **Minnesota Heart Association** for **1958-1959**.

Dr. William C. Bernstein, clinical associate professor of surgery at **University of Minnesota Medical School**, has been appointed director of the division of proctology in the surgery department. **Dr. Bernstein** is chief of the proctology departments at **Veterans Hospital, Minneapolis**, and **Ancker Hospital, St. Paul**. He succeeds **Dr. Walter A. Fansler** who becomes the university's director emeritus **July 1**.

Dr. George B. Martin was recently elected president of the medical staff of **Northwestern Hospital** in **Thief River Falls**. He succeeds **Dr. H. P. Wendt**, who served as president during the past year. Other officers named include: **Dr. K. L. Stensgaard**, vice president; **Dr. George Van Rooy**, secretary; and **Dr. Wendt**, chairman of the advisory committee.

Dr. Donald C. Balfour, emeritus director of the **Mayo Foundation** and emeritus professor of surgery in the **Mayo Foundation**, on **June 25** was elected an honorary foreign member of the **Academy of Surgery of France**, it has been announced by **Dr. Sylvain Blondin** of **Paris**, secretary-general of the academy. **Dr. Balfour** in **1949** was elected an associate foreign member of the academy. **Dr. William J. Mayo** was elected an associate foreign member of the **Academy of Surgery of France** in **1924**, and **Dr. Charles H. Mayo** was given the same membership in **1932**.

Dr. Mary E. Giffin, a former consultant in psychiatry in the **Mayo Clinic**, will become medical director of the **North Shore Mental Health Clinic** at **Highland Park, Illinois**, **September 1**.

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OF GENERAL INTEREST

Dr. Byron H. Armstrong, Hopkins, recently won a search for talent semi-final contest held in the Lake Harriet band shell. Dr. Armstrong is a baritone soloist.

* * *

Jack O. Kirkham, Manager, Oxboro Clinic, 9820 Lyndale Ave. S., Minneapolis, has announced the new association of three specialists with that group: Dr. Mitchell Pincus, obstetrician-gynecologist, Dr. Edward A. Johnson, internal medicine, and Dr. Byron H. Armstrong who sees dermatological patients two mornings each week.

* * *

Dr. John Peterson of Duluth has been named a member of the Committee of Ophthalmology of the Minnesota State Medical Association. He succeeds Dr. Frank N. Knapp, also of Duluth, who recently asked to be relieved of his duties.

* * *

Dr. Emerson A. Moffitt, a member of the Section of Anesthesiology of the Mayo Clinic, received the degree of master of science in anesthesiology from the University of Minnesota on July 7, 1958. Dr. Moffitt has completed a fellowship in anesthesiology at the Mayo Foundation, Rochester, Minnesota, which is a part of the Graduate School of the University of Minnesota.



"YOUR HUSBAND BROUGHT SOMETHING TO CHEER YOU UP!"

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(*Name of university and results of clinical tests sent upon written request.)

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WANTED—Young physician with primary interest in Internal Medicine. Salary for one year, then full partnership in four-man group. Fine new hospital and clinic building. Alternating weeks ends and time for graduate work and vacations. Excellent golf, beach, hunting and fishing. Address E-635, care MINNESOTA MEDICINE.

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REGISTERED NURSES—Immediate openings. Starting salary \$280 a month with opportunity for advancement. Room, board and laundry, annual vacation, liberal sick leave, 40-hour, 5-day week. Apply Personnel Office, Mental Health Institute, Independence, Iowa.

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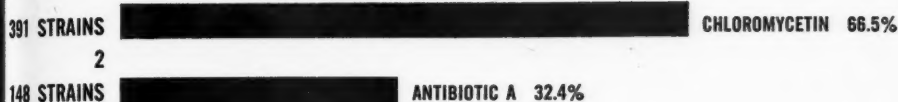
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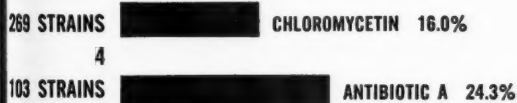
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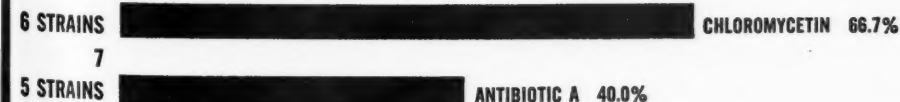
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